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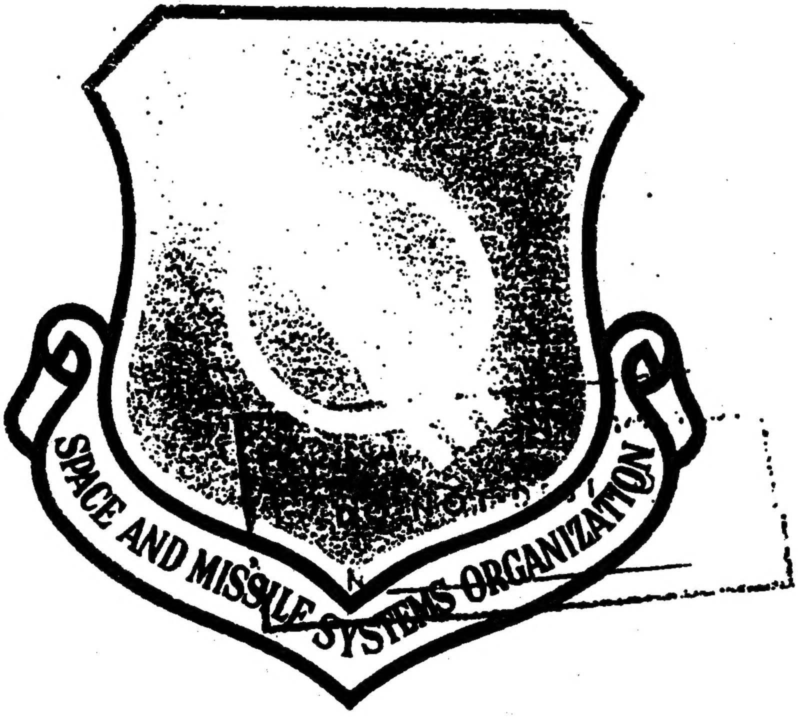
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DOCUMENTARY HISTORY OF AGENA

1. Msg (C/Gp3), from Comdr, WDD to CofS, Cite WDGS 3-3-E, 16 Mar 57.
2. Ltr (S/ND), from WDD (WDTS) to MajGen D. J. Keirn, no subj, 8 Apr 57.
3. Ltr, from WDD (WDTR) to Lockheed Aircraft Corp, subj: AFBMD Policy Review of LAC/MSD Report 35804 "General Test Plan and Related Facilities and Equipment," 23 Sep 57.
4. DF (C/Gp3), from MCPTA to MCPT, subj: Weekly Diary - 4 thru 10 Oct 57, 10 Oct 57.
5. Memo for the File from MCPTA, subj: Letter Contract AF 04(647)-97 - Lockheed Aircraft Corporation - Amendment #6, 11 Oct 57.
6. Memorandum for Col Terhune (C/Gp3), from WDTR, sgd Col Frederic C. E. Oder, subj: WS 117L Guidance and Control, 14 Feb 57.
7. Memorandum for Col Oder from WDTS, signed Col Harry L. Evans, subj Guidance and Control for WS 117L, 29 Mar 57.
8. Msg (C/Gp3) from Lockheed MSD Palo Alto, to Comdr AFBMD, subj: L/C Contract AF 04(647)-181; Proposed Development for Short-Term Improvement of New Horizon Propulsion Subsystem, Cite LMSD 56167, 2 Apr 58.
9. Msg, from Comdr ARDC to Comdr AFBMD, Cite RDZGW 7-4-E, 031045Z.
10. ARPA Order No. 17-59, 4 Sep 58.
11. ARPA Order No. 17-59, Amendment No. 1, 29 Sep 58.
12. ARPA Order No. 17-59, Amendment No. 2, 17 Oct 58.
13. ARPA Order No. 17-59, Amendment No. 3, 26 Nov 58.
14. Navy Msg to Comdr, WADC, subj: Engine Designation; confirmation of, 11 Dec 58.
15. WADC Ltr, to Hq ARDC, subj: Model Designation for WS-117L Engine, 9 Jan 59.
16. DF from WDZWS to LBJ, subj: Request for CCN for Contract AF 04(647)-97, 15 Jan 59.
17. Deleted.
18. Ltr from BMC(LBJ), subj, Back-up Photovoltaic APU Design, 20 Jan 59.
19. Msg from MSD, Sunnyvale to BMC, 21 Jan 59.

[illegible] from Lockheed Aircraft Corp to Comdr, Hq [illegible], subj: Contract No. AF 04(647)-97, Back-up Photovoltaic APU Design, 2 Feb 59.

[illegible] from Comdr, AFBMD to Director, ARPA, 9 Feb 59.

[illegible] for Col Curtin from WDZS, subj: Photovoltaic Solar Cell Research, 16 Feb 59.

23. Memorandum for LtCol Battle from WDZJ, subj: Dual Burn Engine Capability, 6 Mar 59.

2[illegible]. Ltr (S/RD), AFBMD (WDZH) to MajGen D. J. Keirn, no subj: 9 Mar 59.

25. ARPA Order No. 17-59, Amendment No. 4, 10 Apr 59.

26. ARPA Order No. 17-59, Amendment No. 5, 13 Apr 59.

27. Ltr, Lockheed Aircraft Corp to Comdr AFBMD, subj: Analytic and Stability Studies of WS 117L Flight Control Section.

28. Ltr from Lockheed Aircraft Corp to Comdr, AFBMD, subj: Contract AF 04(647)-9 Solar APA Backup Program, 2 May 59.

29. Msg (C/Gp3) from Lockheed to LBJP E. S. Silberman, subj: Amendments to CCN No. 23, 6 May 59.

30. ARPA Order No. 17-59, Amendment No. 6, 18 May 59.

31. WDZ Memorandum for multiple addresses, subj: ARPA Order 17-59 (as amended), 18 May 59.

32. Ltr from AFBMD (WDTIM) to LBER, subj: Letter Contract Supplemental Agreement 35 to Contract AF 04(645)-65, Closed Loop Propellant Utili ation System, 4 Jun 59.

33. AFBMD report, subj: Transit II Program Progress Report for May 1959, 8 Jun 59.

34. Para 4, Weekly Diary -- 11 thru 18 June 59 from BMC (LBJ), 18 Jun 59.

35. ARPA Order No. 17-60, Amendment No. 8, Project Code No: as indicated below, 1 Jul 59.

36. ARPA Order No. 96-60, Project Code No. 3600, 1 Jul 59.

37. AFBMD Report, subj: TRANSIT II Program Progress Report for 30 Jun 59.

[illegible] Lockheed to Comdr AFBMD, subj: Improving Model 8048 Engine Performance, 28 Jul 59.

39. [illegible] Ltr to [illegible], Mr. Silberman, subj: Performance Improvement of LR81-Ba-5 Engine, 31 Jul 59.

40. AFBMD Report, subj: Modification of AGENA Vehicle, 7 Aug 59.

41. Msg from Comdr to AFSWC, 7 Aug 59.

42. Ltr from Lockheed to Comdr, AFBMD, subj: Contract No. AF 04(647)-347, Flight Termination System Atlas Boosted Vehicles, 10 Aug 59.

43. Ltr from WDZEV to WDZSM (Maj Callan), subj: Minutes of MIDAS FTWG Flight Operations Subcommittee, 29 Jun 59, 13 Aug 59.

44. Ltr from WDZEV to WDTCS (LtCol Salzer), subj: Flight Termination System of Atlas Boosters, 18 Aug 59.

45. AFBMD report, subj: Modification of AGENA Vehicle, 31 Aug 59, 8 Sep 59.

46. Ltr WDZEA to WDZSD, subj: Discoverer Capsule Batteries, 10 Sep 59.

47. Ltr from WDZEG to WDZRT (Capt Van Dusen), subj: STL Plan 165-41, Study of Attitude Sensors for Space Missions, 17 Sep 59.

48. AFBMD (WDZSM) ltr to WDZE, subj: Recommendations of LMSD-CVAC Vehicle-Booster Configuration Meeting, 26 Sep 59.

48a. MFR from Col Frederic C. E. Oder, subj: Discoverer/SAMOS/MIDAS/COMSAT/AGENA Confiburations, 29 Sep 59.

49. AFBMD report, subj: Modification of AGENA Vehicle, 30 Sep 59, 1 Oct 59.

50. Msg from AFBMD to Lockheed, Cite WDZE 10-5-E, 5 Oct 59.(C/Gp3)

51. Msg, Cite WDZE-10-10-E, 9 Oct 59.

52. Msg CITE WDZE-10-9-E, 9 Oct 59.

53. ARPA Order No. 96-60, Amendment No. 1, Project Code No. 3600, 15 Oct 59.

54. Ltr (Uncl w/o C/Gp3 atch) from WDZEV to WDPCR, subj: Space Programs Status Report, 15 Oct 59, w/1 Atch.

55. Ltr (C/Gp3) from WDZEV to WDZD (Col Evans), subj: Discoverer, MIDAS, Samos, and Comm Sat (Steer) Configuration and Schedule, 16 Oct 59, w/2 Atch: 1. Chart, Space Systems Progress; 2. 4 charts, Configurations #1 - 4, 4th chart CONFIDENTIAL, Gp3.

[illegible] report, subj: [illegible] of AGENA Vehicle, 31 Oct 59, 2 Nov 59.

Ltr from [illegible] to [illegible], subj: Discoverer/Samos/Midas/Transit/Agena Configurations, 13 Nov 59.

Ltr from [illegible] to [illegible], subj: Discoverer/Samos/Midas/Transit/Agena Configurations, 17 Nov 59.

59. ARPA Order No. 96-60, Amendment No. 2, Project Code No. 3600, 3 Dec 59.

60. Ltr from AFFTC to AFBMD, subj: Engine Model Designations, 18 Dec 59.

61. AFBMD report, subj: Modification of AGENA Vehicle, 30 Nov 59, 22 Dec 59.

62. Ltr from AFBMD Field Office, WDGEV-6, to Comdr AFBMD, subj: Procedure for Coordination of Discoverer Engineering Approvals, 5 Jan 60, w/1 Atch: Report, Subj: Procedure for Coordinating Approvals on Engineering Modifications to Agena Vehicles at Lockheeds Facility at Vandenberg AFB.

63. Ltr from WDZNE to WDZY, subj: Control of Agena Vehicle Changes following AF Acceptance, 19 Jan 60.

64. AFBMD report, (C/Gp3), subj: AGENA Program Progress Report as of 31 Jan 60, 12 Feb 60.

65. Ltr (C/Gp4) from AFDRD to ARDC (RDR), subj: Augmentation of Propulsion Program, 23 Feb 60.

66. Msg, Cite AFDDP 73993, 27 Dec 60.

67. Ltr from Lockheed to AFBMD (WDZNR), subj: Standardization Provisions in the Agena Configurations - Interim Report, 4 Mar 60.

68. Msg (S/Gp3) from Lockheed to AFBMD, Cite LMSD 354768, 8 Mar 60.

69. AFBMD report (C/Gp4), subj: AGENA Program Progress Report as of 29 Feb 60, 8 Mar 60.

70. AFBMD Ltr (Uncl w/o Conf/Gp3 Indorsement) to WDZN, subj: Reliability Testing of Agena Subsystems by Air Force Agencies, 9 Mar 60, w/1st Ind, same subj, 5 Apr 60.

71. Ltr (Uncl w/o C/Gp4 Atch), sgd D. H. Murphy, Contracting Officer, to Comdr ARDC, subj: NASA Order No. S-4601-C, 23 Mar 60, w/atch: Statement of Task, w/1 (C) Atch, NASA Agena Launch Schedule.

72. AFBMD (WDZN-1) Ltr to multiple address, subj: Agena Vehicle Captive Test Program, 11 Apr 60.

73. AFBMD Daily Bulletin No. 71, 12 Apr 60.

74. NASA Agena-B Program, MSFC and AFBMD Management Relationships, 14 Apr 60.

75. AFBMD report (C/Gp4), AGENA Program Progress Report as of 30 April 1960, 6 May 60.

76. AFBMD ltr (C/Gp4), subj: Assignment of Thor Vehicles to the NASA Agena B Program, 12 May 60.

77. AFBMD ltr (C/Gp4) to Hq ARDC, subj: General Schriever's Appearance before Johnson Committee, 9 June 1960, 2 Jun 60.

78. WDZY-2 ltr to Lockheed Missiles & Space Division, subj: Improvement of Agena Flight Preparation Procedures, 13 Jun 60.

79. WDZ ltr to ARDC (RDG), subj: Management Relations with the NASA Concerning the NASA Agena B Program, 16 Jul 60.

80. WDZ ltr to ARDC (RDGM), subj: NASA Agena B Program, 16 Jul 60.

81. AFBMD (WDG-16) ltr to WDZD (Col Evans), subj: Agena Checkout Philosophy, 9 Sep 60.

82. WDRA ltr to WDG-16, subj: Agena Checkout Philosophy, 19 Sep 60.

83. AFBMD (WDRSS) Ltr (S/Gp3) to ARDC (RDRB), subj: Request for Study--Atlas-Agena's Launch from AMR, 19 Sep 60.

84. AFBMD (WDZY-1) ltr to WDZYD (Col Battle), subj: Test Criteria, 22 Sep 60, w/1 Atch, Ltr, LMSD/368772, w/atch.

85. WDG ltr to WDZ, subj: NASA Agena B Schedule, 8 Nov 60.

86. BMC (LBZJR) ltr to Lockheed Aircraft Corp, subj: Implementation of New Test Philosophy, DISCOVERER Program, Contract AF 04(647)-558, 18 Nov 60.

87. Historical report of the NASA Agena B Program for 1 Jul to 31 Dec 60.

88. Ltr (S/Gp3) sgd Col Paul J. Heran to LEK (Mr. Gibson), subj: Agena Configuration, 3 Jan 61.

89. BMC (LBZJR) ltr to Lockheed Corp, subj: Implementation of New Test Philosophy Discoverer Program Contract 04(647)-558, 5 Jan 61.

90. Historical Report, (C/Gp4) NASA Agena "B" Program, 17 Jan 61.

91. Msg (C/Gp4) from Hq USAF, cite AFDSD-MS 78828, 191818Z Jan 61.

92. Msg from BMC to LMSD, subj: Contract AF 04(647)-558, Implementation of New Test Philosophy, Discoverer Program, 3 Feb 61.

93. Ltr from BSC (LBZJR) to Lockheed, subj: Make or Buy Structure Satellite Systems Contracts, 13 Feb 61.

94. BMD (LBZJB) ltr to multiple address, subj: Procurement Requirements, 14 Feb 61.

95. National Aeronautics and Space Administration Agena B Launch Vehicle Program - Management Organization and Procedures, 14 Feb 61.

96. AFBMD (WDZ) Ltr to WDRV and WDG, subj: Responsibilities of the Aerospace Corporation, 23 Feb 61.

97. AFBMD (WDZYA) Ltr (Uncl w/o C/Gp4 Atch) to Mr. Robert H. Shatz, subj: Technical Data on the Agena Vehicle, 24 Feb 61, w/1 Atch: Technical Data.

98. SSD (SSZA) ltr to Lockheed, subj: New Test Philosophy Implementation, By-pass of Vandenberg MAB Building, 16 Jun 61.

99. SSD (SSZA) ltr to All SSZA Subsystem Personnel, subj: Discoverer EJA Approval Procedures, 24 Jul 61.

100. Msg (C/Gp4) from SAFS to SSD, info AFSC and DCAS, Cite SAFS 92454, 092008Z Aug 61.

101. SSD (SSZNE) ltr to SSE (Dr. Rockefeller), subj: Historical Summary, ARDC/AFSC Support of Army/Navy Space NASA Programs, 9 Aug 61.

102. SSD (SSVR) Ltr (Uncl w/o C/Gp4 Atch), to SSE (Dr Rockefeller), subj Historical Summary, ARDC/AFSC Support of Army Navy Space NASA Programs, 9 Aug 61, w/1 atch

103. Aerospace Corp Ltr to Col H. L. Evans, subj: Standardizing the Agena, 14 Sep 61.

104. SSD (SSZ) ltr to Chiefs of Offices through Branch Level, subj: Development and Utilization of the Agena D, 18 Sep 61.

105. SSD (SSZ) Ltr to Aerospace Corp (Mr. Brewer), subj: Standardized Agena, 18 Sep 61.

106. Asst Secretary of Defense Memorandum for the Asst Secy of AF (R&D), subj: Standardized Agena (C/Gp4), 4 Oct 61.

107. Msg (S/Gp3) from SAFS to SSD, info AFSC and DCAS, Cite SAFS 68264, 062221Z Oct 61.

108. SSD (SSZDK) Ltr to SSKK, subj: Authorization for Type of Contract, 9 Oct 61.

109. Asst Secy of Defense Memorandum for the Asst Secy of AF (R&D) (C/Gp4), subj: Titan III Launch Vehicle Family, 13 Oct 61.

110. AFSC (SCGN) Ltr (C/Gp^4) to Comdr SSD, subj: Standardized Agena and Titan III, ca 17 Oct 61.

111. Msg, Cite RWRMP-17-10-19-E, 17 Oct 61.

112. Memo, sgd Brockway McMillan (FOUO), for Asst Secy of Def, ODDR&E, subj: Standardized Agena Program, 24 Oct 61.

113. Study of the Agena "D" by the Johnson Committee (C/Gp^4), 25 Oct 61.

114. Active SSZ Contracts, 17 Oct 61.

115. AFSSV ltr (C/Gp^4) to AFSC, Subj: Standardized Agena Space Vehicle (Agena D), 26 Oct 61.

116. Agena Office Mission and Organization, Nov 61.

117. DAF Memo for Chief of Staff, subj: Standardized Agena, 3 Nov 61, w/1 Atch: Memorandum for Director, DR&E, 31 Oct 61.

118. SSD (SSZA) Ltr to Col Evans, subj: Items to be Considered when Accelerating the Agena B Schedule, 6 Nov 61.

119. SSD (SSZ) Ltr (S/Gp3), subj: Agena "D," 6 Nov 61.

120. Lockheed ltr to F. W. O'Green, subj: Summary of Instructions Issued by Dr. Charyk in Agena D Meeting of November 7, 1961, 9 Nov 61.

121. Ltr, subj: Organizational Changes and Personnel Reassignments, 13 Nov 61.

122. Ltr to Deputies and Chiefs of Major Staff Offices, subj: Project 662A, 20 Nov 61.

123. Ltr to Deputies and Chiefs of Major Staff Offices, subj: Establishment of Project Office 662A, 20 Nov 61.

124. MFR (Uncl w/o C/Gp^4 Atch), subj: Agena D, 20 Nov 61.

125. Msg from Hq USAF to AFSC, info SSD, Cite AFSPN 90799, 222309Z Nov 61.

126. SSD Ltr (C/Gp^4) to Lockheed, subj: Agena D Structural Criteria, 24 Nov 61.

127. AFSC (SCGN Ltr (C/Gp^4) to SSD, subj: Instructions on Standard Agena D Program, 24 Nov 61.

128. MFR (C/Gp^4), subj: Agena "D" Conference, 27 Nov 61, w/1 Atch: Summary of Instructions Issued by Dr. Charyk in Agena D Meeting on November 7, 1961.

129. Memo of Understanding from RWRM (Lockheed AFPRO) to Col Henry B. Kucheman, 28 Nov 61.

130. Msg (C/Gp4) from Hq USAF to AFSC, info SSD, cite AFSDC-F 82530, 301909Z Nov 61.

131. Msg (C/Gp4) from SMON to Lockheed, Sent 30 Nov 61.

132. Msg (S/Gp 3) from OSAF to AFSC, info DCAS, cite SAFS 83174, 042206 Dec 61.

133. Omitted.

134. SSD Ltr to Deputies and Chiefs of Major Staff Offices, subj: Deputy for Agena.

135. SSD (SSZDB) Ltr (C/Gp4) to SSXD, subj: Agena D/DM-21 Interface, 18 Dec 61.

136. SSD (SSXD) Ltr to AFSC (Gen Schriever), subj: Instructions on Standard Agena Program, 18 Dec 61, w/1 Atch: Program 662A Management and Operational Plan, w/6 Atch.

137. Ltr SSX-1 Ltr to SSZ (Lt Col Strathy), subj: Agena D Programming Data, 19 Dec 61.

138. Msg from LMSC, Cite LMSC A071763/62-41/100, 280030Z Dec 61.

139. SSXD Ltr to SSZ, subj: Procurement of Optional Equipment, 28 Dec 61.

140. Msg (C/Gp 4), Cite AFSSV-EQ 90915, 052324Z Jan 62.

141. MFR from SSX, subj: Briefing to Dr. Charyk, 5 Jan 62, (C/Gp4).

142. Ltr (C/Gp4) from SSD (SSXD) to Distribution, subj: Fund Requirements for Program 662A, 11 Jan 62.

143. SSD (SSZDT) Ltr to SSVX (Mrs. Arnold), subj: Sole Source Justification for Complexes 75-3 and 75-1, 18 Jan 62.

144. SSD (SSXDA) Ltr (C/Gp4) to SSZKE (Major Lochry), subj: Agena D Performance Data, 18 Jan 62.

145. SSX MFR, 23 Jan 62.

146. SSX MFR, subj: 18 January - 19 January Agena D Briefing, 2[illegible] Jan 62.

147. SSD (SSVXE) Ltr to SSZD (Mr. Moore), subj: Additional Instrumentation on Discoverer Flights, 9 Feb 62.

148. SSXD MFR, subj: Discussions with Mr. O'Green and Staff, 13 Feb 62, 14 Feb 62.

149. SSXA Ltr to SSZ, SSB and SSV, subj: Agena D Advanced Component Improvements, 20 Feb 62.

150. [illegible], subj: Staff Visit of MajGen Ritland and Mr. Kelly Johnson, 26 Feb 62.

151. Ltr, MajGen O. J. Ritland and Clarence L. Johnson to Gen [illegible] Schriever, 27 Feb 62.

152. Msg from AFSC, Cite SCGN-28-2-46, 281927Z Feb 62.

153. Ltr (C/Gp4) from SSKD to SSZ and SSZX, subj: Agena D Weight, 2 Mar 62.

154. Ltr (C/Gp3) from SSKD to SSZ, subj: Agena D Delivery Schedule, 2 Mar 62.

155. Ltr from SSKD, subj: Policy Memorandum - Agena D Optional Equipment Procurement Procedures, 5 Mar 62.

156. Msg Cite SCGN-7-3-12, 071630Z Mar 62.

157. Lockheed Ltr to AFSSD (SSZ), subj: Comparison of Costs - Agena B v. Agena D, 8 Mar 62.

158. SSD (SSVXB) Ltr to SSVR (Maj J. Albert), subj: Study of Thor Agena [illegible] Configurations, 12 Mar 62.

159. SSD (SSVXB) Ltr to SSVXK, subj: DM-21 Agena D Pad and AGE Modification, 13 Mar 62.

160. SSD (SSKD) Ltr to SSK, subj: Contract AF 04(693)-68, Request for Authority to Use Form C Price Re-determination, 22 62, (C/Gp4).

161. SSD (SSKD) Ltr to Lockheed, subj: Contract AF 04-695-21 - Incentive Fee Negotiations, 22 Mar 62.

162. WCMR (RWRM) Ltr to MajGen O. J. Ritland, subj: Progress Made in Improvements to LMSC Accounting System, 23 Mar 62.

163. Report (S/Gp3), subj: Space Systems Division USAF Abridged Package 648B - Agena D, 2 Apr 62.

164. Report (S/Gp3), subj: SSD USAF Reimbursable Fund Requirement for 648B-Agena D, 2 Apr 62.

165. SSD (SSH) Ltr to SSRP, subj: Requirement for Component Improvement Propulsion Advisory Committee, 2 Apr 62.

166. Negotiated Contract AF 04(695)-21, 6 Apr 62.

167. SSD (SSV) Ltr to DCS (LtGen Estes), subj: Atlas Launches at AMR and PMR, 9 Apr 62, w/1 Atch: Cy ltr from Gen Estes to Gen Ritland, 19 Mar 62, same subject.

168. [illegible] Agena D Configuration, 18 Apr 62.

169. [illegible] subj: Lockheed-Air Force Meeting on Agena D Operational [illegible], [illegible] Apr 62.

170. Ltr, MajGen O. J. Ritland to Gen B. A. Schriever, no subj, 25 Apr 62, w/1 Atch: Ltr, 25 Apr 62, to Comdr AFSC, Rept of 2d Review of Agena D [illegible]

171. SSD (SSH) Ltr to SSS, subj: Attendance at Mockup, CTCI and DEI Boards, 27 Apr 62.

172. SSD (SSH) Ltr to SSOE (Col Berg), subj: SSH (Agena D) Objectives for FY 63, 30 Apr 62.

173. SSD (SSHD) Ltr to SSK, subj: Contract AF 04(695)-68 - Review of 'Make or Buy' Program Pursuant to DCAS AFPI Supplement 2, 9 May 62.

174. MFR, subj: FY-62 Incremental Funding of the Agena D Contracts, 10 May 62.

175. SSD (SSHD) Ltr to Lockheed, subj: Agena D Optional Equipment, 14 May 62.

176. SSD (SSHD) Ltr to SSCM (LtCol Warren), subj: Underfunded Contracts, 14 May 62.

177. MFR, subj: Modernization of Industrial Facilities Bell Aerosystems Company, 16 May 62, w/1 Atch: MFR same subj dtd 15 May 62, w/1 Atch, Cy Msg to LMSC from Bell, no date.

178. SSD (SSH) Ltr to SSHD (LtCol Blum), subj: Technical Support Contract, 21 May 62.

179. NASA Ltr to Hon Brockway McMillan, ca 21 May 62.

180. Asst Secy of Defense Memorandum (FOUO) for the Secretary of Defense and NASA, subj: DOD/NASA Agena D Agreement, 28 May 62.

181. Msg (C/Gp4) Cite SSH-1-6-4, 1 Jun 62.

182. Msg Cite SSH-2-6-7, 2 Jun 62 (S/Gp4).

183. SSD (SSH) Ltr to AFPRO (Col Voyles), Lockheed, subj: AFPR Surveillance of -68 Contract Spares Procurement, 4 Jun 62.

184. Msg from [illegible] to SSD, info MSFC, Cite LSFA 12-6-23, 121408Z Jun 62.

185. Ltr (Uncl w/o S/Gp Atch), subj: Request for Information by the Space Technical Objectives Task Group, 13 Jun 62, w/1 Atch: 648B Summary.

186. Msg (C/Gp4) from Douglas Aircraft Co Inc, 15142Z Jun 62.

[illegible] Component Improvement Briefing to MajGen Ritland and [illegible], 25 Jun 62.

188. Ltr (C/Gp4) from [illegible], subj: Agena D Presentation, 25 Jun 62, 27 Jun 62.

189. [illegible] Agena D Funding, 28 Jun 62.

190. Msg (C) [illegible] 28-6-61, 281813Z Jun 62.

191. SSD (SSZD) Ltr (C/Gp4) to multiple address, subj: Agena D Optional Equipment Flight Status, 3 Jul 62.

192. SSD (SSVZO) Ltr to SSHAO, subj: Conversion of AMR Complex 14 to an Atlas/Agena Configuration, 5 Jul 62.

193. SSD (SSH) Ltr to multiple address, subj: Agena D Configuration Control, 9 Jul 62.

194. SSD (SSH) ltr to multiple address, subj: Configuration Control of Agena D, 11 Jul 62.

195. CCN Status Contract AF 04(695)-21 As Of 12 July 1962.

196. SSD (SSZDH) Ltr to SSRGT and SSVX, subj: Program Designation Change, 12 Jul 62.

197. SSD (SSH) Ltr (C/Gp4) to SSC-1 (Col Wickland), subj: International Programs, 12 Jul 62.

198. SSD (SSH) Ltr to AFSC (SCGN Col Nudenberg), subj: 648B Monthly Program Progress and Status Report Period Ending 30 June 1962, 13 Jul 62.

199. SSD (SSH) Ltr to SSKR (Mr. Montgomery), subj: Preliminary Impact Evaluation of Impending Aerospace Industry Strike on SSD Programs (Reports Control Symbol (RCS) AF-XDL-M2, w/1 Atch: Report,

200. SSD (SSHAA-2) ltr to 6593 Test Group, subj: LR81 Rocket Engine, 20 Jul 62.

201. SSD (SSHA) Ltr to Lockheed, subj: Agena Multiple Start Engine Compatibility with DOD Missions, 25 Jul 62.

202. SSD (SSHR) Ltr to ASD, subj: Request for Type Designation, Agena D Vehicle, 26 Jul 62.

203. Msg from Douglas Aircraft Co Inc to Lockheed, 1 Aug 62.

204. SSD (SSHK) to SSH, subj: AF 04(695)-194, Authority for Non-Competitive Negotiated Procurement, 1 Aug 62.

205. Msg from SSD to ARDC, cite SSH 2-8-1, 2 Aug 62.

[illegible] SSD (SSHAA) Ltr to Lockheed, subj: Agena Rocket Engine Designations, [illegible] Aug 62.

206. SSD (SSHD) Ltr to AFPRO, Lockheed, subj: Requirement for Vehicle Transporter, 3 Aug 62.

207. SSD (SSH) Ltr to multiple address, subj: Technical Manuals for Agena B, 10 Aug 62.

208. SSD (SSHKK) Ltr to SSHR (Maj Harnes), subj: Transfer of Agena D Program Management, 13 Aug 62.

209. Msg from SAFOI-3C Maj Moore for release 15 Aug 62.

210. SSD (SSHGD) Ltr to multiple address, subj: Auto-DRAPE Orientation, 16 Aug 62.

211. SSD (SSHAA) Ltr to Lockheed, subj: Establishment of Agena-D Prelaunch Conditions, 20 Aug 62.

212. SSD (SSHAA) Ltr to Lockheed, subj: Agena Multiple Start Engine Compatibility with DOD and NASA Program, 24 Aug 62.

213. Status Report on Agena D (Program S-01A) August 62.

214. Msg from SSD to Lockheed, Cite SSH 27-8-33, 27 Aug 62.

215. Memorandum of Agreement, subj: Management Relationships Between SSH-SSZI, SSZN, SSZX and LMSC, 5 Sep 62.

216. SSD (SSHKK) Ltr to multiple address, subj: Authorization for type of Contract; Contract AF 04(695)-198, 7 Sep 62, w/1 atch.

217. SSD (SSHR) Ltr to SSZ, subj: Agena D FY-63 Funding Requirements to Support SSZ Program Requirements, 11 Sep 62.

218. SSD (SSH) Ltr to SSVR, subj: Agena D FY-63 Funding Requirements to Support NASA Program Requirements, 11 Sep 62.

219. Msg from SSD to CSAF, Cite SSH-13-9-10, 13 Sep 62.

220. Msg from SSD to AFSC, Cite SSH-13-9-11, 13 Sep 62.

221. SSD (SSHAA) MFR to Capt George W. Watts, 17 Sep 62.

222. SSD (SSH) Ltr to Lockheed, subj: Production of Optional Kits under the -68 Contract, 24 Sep 62.

223. SSD (SSG) Ltr to Secy of the Air Force (SAFRD), subj: FY-62 and FY-63 Agena D Funding Requirements, 27 Sep 62 (S/Gp3).

224. SSD (SSH) Ltr to Lockheed, subj: First Article Configuration Inspectio of S-01A/13, 17-19 Sep 62, 28 Sep 62.

225. Msg, Cite SSH 28-9-33, 28 Sep 62.

226. Lockheed Ltr to AFSSD (DCCA), subj: Management of the S-01A Program, 1 Oct 62, w/1 Atch: Program Management Paper.

227. 1st Ind (Uncl w/o C/Gp4 Atch), SSD to SSVSP, subj: Liquid Rocket Engin Data, 5 Oct 62, w/1 Atch: Engine Data Chart.

228. SSD (SSHSD) Ltr to Lockheed, subj: Ground Rules for Management of the AC-1 System, 8 Oct 62.

229. Msg, Cite SSH 12-10-23, 12 Oct 62.

230. SSD (SSH) Ltr to SSG, subj: Agena Presentation, 15 Oct 62.

231. Msg (C/Gp4), Cite SSH 15-10-28, 15 Oct 62.

232. 1st Ind, SSD (SSH) to SSVZR, subj: Agena D/Gemini Configuration, 16 Oct 62.

233. Memorandum to SSH (Col Fletcher), subj: S-01A Requirements Based on TAT Boosted Missions, 18 Oct 62.

234. SSD (SSH) Ltr to AFPRO (Col Voyles), Lockheed, subj: AFPR Logistics Surveillance of Program S-01A, 19 Oct 62.

235. SSD (SSHR) Ltr to SSVZR (MajAlbert), subj: Optional Equipment Requirements for S-01A Vehicles, 22 Oct 62.

236. SSD (SSH) Ltr to SSHKK, subj: Sole Source Justification, Contract AF 04(695)-221, 22 Oct 62.

237. Msg, Cite SSH 23-10-37, 23 Oct 62.

238. SSD (SSHR) Ltr to SSO (Col Hedrick), subj: Agena D C&C Optional Equipment, 31 Oct 62.

239. SSD (SSHR) Ltr to SSVR, subj: Agena D FY-63 Funding Requirements to Support NASA, 1 Nov 62.

240. SSD (SSH) Ltr to Lockheed, subj: S-01A Vehicle Assignment Philosophy, 2 Nov 62.

241. SSD (SSH) Ltr to Lockheed, subj: Fixed Ullage Rocket Carrier Problem, 8 Nov 62.

242. SSD (SSHKK) Ltr to multiple address, subj: Request for Authority to Extend Definitization Date and to Obligate Additional Funds - Letter Contract AF 04(695)-68, Agena D, 14 Nov 62.

243. SSD ([illegible]) Ltr to SSVZ, subj: Proposed NASA/Air Force Management [illegible] 21 Nov 62.

244. SSD ([illegible]) Ltr to multiple address, subj: Request Authorization for [illegible] Contract AF 04(695)-233, 16 Nov 62.

245. SSD ([illegible]) Ltr to 6595 ATW (Col Perry), subj: Umbilical Test Philosophy [illegible] Removal for SLV3/S-01A/Payload FSV, 26 Nov 62.

246. Msg (C/Gp4), Cite AFSSV-KQ 98986, 302127Z Nov 62.

247. SSD (SSZ) Ltr to Lockheed, subj: First Article Configuration Inspection of S-01A/19, 6-23 Nov 1962, 12 Dec 62.

248. Historical Data - Jul-Dec 1962 from SSZAR to SSZA, 24 Jan 63.

249. NASA Ltr to Gen B. A. Schriever, 25 Jan 63.

250. Contractor Performance Evaluation Report on AF Contract AF 04(695)-21, with Lockheed Missiles and Space Company, Sunnyvale, California, 14 Feb 63, (C/Gp4).

251. Ltr [illegible] Gen B. A. Schriever to Dr. Robert C. Seamans, Jr., 6 Mar 63.

252. Space Systems Division USAF S-01A Management Package, 20 Mar 63 (S/Gp3).

253. Msg, Cite MSFA 16-4-35, 161700Z Apr 63.

254. SSD (SSV) Ltr to Distribution, subj: Letter of Understanding Between NASA Lewis Research Center and USAF Space Systems Division for Transfer of NASA Agena Contracts, 9 May 63.

255. SSD (SSZAO) Ltr to SSZN and SP-206, subj: Configuration Control Management of Program S-01A Booster Vehicles, 19 Jun 63 (S/Gp4).

256. Msg Cite AFRSTD 76993, undated, and Msg Cite MSFA 15-7-22, 152045Z Jul 63.

257. AFSC (MSFAR) Ltr to multiple address, subj: Transmittal of Memorandum of Agreement, 20 Aug 63, w/1 Atch: USAF-NASA Memorandum of Agreement NASA Office of Space Sciences Agena Launch Vehicle Program, 9 Aug 63.

258. SSD (SSVA) Ltr (C/Gp4) to SSV, subj: Annual Report of Achievements (3 Oct 1962 - 3 Oct 1963), 27 Sep 63.

259. DOD News Release No. 1396-63, 21 Oct 63.

260. Msg Cite MSFA 7-11-6, 071956Z Nov 63.

261. Summary Report - Transfer of NASA Agena Programs from AFSSD to NASA LeRC, 31 Dec 63.

2[illegible]. SSD (SSVAT) Ltr to Hq AFSC (MSPA), subj: Summary of Transferred Agena Programs, 3 Jan 64.

263. SSD (SSVA) Ltr (Uncl w/o C/Gp4 Atch), subj: Historical Report: 1 Jul 1963-31 December 1963, 4 Feb 64, w/2 Atch.

264. SSD (SSVAG) Ltr to SSVA (Col Blum), subj: Erection of Thor-Agena in Front of Building A, 16 Apr 64.

265. SSD (SSVA) Ltr (C/Gp4) to SSEH, subj: Historical Report, 1 January 1964-30 June 1964, 12 Aug 64, w/5 Atch: 1 (U); 2 (C); 3 (U); 4 (C); 5 omitted; 6 (C).

266. SSD (SSG) Ltr (Uncl w/o C/Gp4 Atch) to ARDC (DMSS MajGen Ritland), subj: Recent Agena Flight Problems, 12 Nov 64, w/1 atch: Proposed letter to Sec McMillan from Gen Schriever, w/1 atch.

267. SSD (SSG) Ltr (Uncl w/o C/Gp4 Atch) to AFSC (Gen Schriever, subj: General Dynamics/Astronautics Proposal to Increase SLV-3/Agena Payload Capability, 27 Nov 64, w/2 Atch; Atch 1 C/Gp4.

268. SSGA Memorandum for Generals Funk and Cooper (FOUO), subj: Request for Authority to Raise Major Agena Subcontractors to Associate Status, 10 Dec 64.

269. SSD (SSK) Ltr (C/Gp4) to AFSC and Hq USAF (in turn), subj: Request for Determination and Findings Pursuant to AFPI 3-214, 25 Jan 65.

270. SSD (SSVA) Ltr (C/Gp4) to SSEH, subj: Historical Report, 1 July 1964 - 31 December 1964, 5 Feb 65, w/5 Uncl Atch.

271. Gemini Atlas/Agena Target Vehicle System, Management and Responsibilities Agreement between the National Aeronautics and Space Administration, Manned Spacecraft Center and The United States Air Force Air Force Systems Command, Space Systems Division, Mar 65.

272. SSD (SSGA) MFR, subj: Biosatellite Program -- Call from Cols Pickering and Swan of AMD, 9 Mar 65.

273. Memorandum for Gen Funk, Thru Gen Cooper, from Col Hamilton, subj: Advanced Life Support Capsule, 2 Apr 65.

274. SSD (SSK) Ltr (C/Gp4) to AFSC and Hq USAF (in turn), subj: Request for Determination and Findings Pursuant to AFPI 3-214, 25 May 65.

275. SSD (SSLO) Ltr to AFSC (SCOO), subj: Request for Organization Change -- Gemini Agena Division (SSVAT), 29 Jul 65.

276. SSD (SSVA) Ltr (C/Gp4) to SSEH, subj: Historical Report, 1 January 1965 - 30 June 1965, 9 Aug 65, w/5 Atch; Atch 1 (C/Gp4).

277. Msg Cite SSG 10111, 20 Oct 65.

278. SSD (SSV) Ltr to SSGS (B/Gen Martin), subj: Program 206-II [illegible] Launch Capability Contract, 3 Nov 65.

279. AFSC Ltr sgd Gen B. A. Schriever to SSD (MajGen Funk) and AEDC (BrigGen Gossick), 22 Nov 65.

280. Msg Cite SSD 10125 Nov 65.

281. SSD (SSVA) Ltr (C/Gp4) to SSEH, subj: Historical Report, w/6 Atchs 1. (U); 2. omitted; 3 (U); 4. (U); 5 (C); 6. (U); 7. (C), 8 Feb 66.

282. SSD (SSK) Ltr to AFSC and Hq USAF, subj: Request for Determination and Findings Pursuant to AFPI 3-214, 8 Jul 66.

283. SSD (SSVA) Ltr (Uncl w/o C/Gp4 Atchs 2, 4, 5 & 8), subj: Historical Report for the Period of 1 January 1966 - 30 June 1966, 29 Jul 66.

284. SSD (SSV) Ltr to SSGS (Gen Martin), subj: Agena Guidance and Control Subsystem Development, 1 Feb 67, (C/Gp3).

285. SSD (SSVA) Ltr (Uncl w/o C/Gp4 Atch 2, 7, 8 & 9) to SSV, subj: Historical Report, 1 Jul 66 to 31 Dec 66, 3 Feb 67.

286. DAF Ltr (C/Gp3) to SSVA, subj: Attitude Control System Configuration, 8 Feb 67.

287. DAF (SP-7B) Ltr to SSVA (Major Bell), subj: Standard Agena Allocation, 13 Feb 67.

288. AFRPL (RPG) Ltr to SSD (SSGV/Col D. V. Miller), subj: Advanced Agena Development, 26 Mar 67.

289. SSD (SSVAP) Ltr (S/Gp3) to SSEH (Mr. McClellan), subj: Users of Standard Agena Vehicle, 7 Apr 67.

290. SSD (SSVA) Ltr to SSV (Col Hamilton), subj: Improved Agena Development Program, 28 Apr 67.

290a. Briefing Charts (S/Gp3), Report of Special Board on Agena Procurement, SAFSP, 1 May 67.

290b. Msg (C/Gp3), Cite SSO 67-12, 24 May 67.

290c. Msg (C/Gp4), Cite SCSS 22931, 262111Z 67, May 67.

291. SSD (SSV) Ltr to SAFSP (Gen Martin), subj: SSD Position on SAFSP Proposal for a New Production Management Concept for Agena, 2 Jun 67.

292. MFR sgd Maj Robert R. Crawford, 7 Jun 67.

[illegible] Ltr ([illegible]) to [illegible] (Gen Martin), subj: Improved Agena [illegible], [illegible] Jun 67.

[illegible] Ltr ([illegible]) to multiple address, subj: Improved Agena, [illegible] 67.

[illegible] Briefing Charts, subj: Customized Standard Agena, 21 Jun 67.

[illegible] (SP-1) Ltr (C/Gp3) to SSD (Gen Cooper), subj: Improved Agena, [illegible] Jun 67.

297. MR, sgd Maj Robert F. Crawford, subj: Improved Agena Requirements Briefing, 28 Jun 67.

298. Briefing Charts on Agena D and E Management Problems, 11 Jul 67.

299. SAMSO (SMVA) Ltr (Uncl w/o C/Gp4 Atch 5 and 8) to SMV, subj: Historical Report, 27 Jul 67.

300. Program Plan, subj: Customized Standard Agena, Support Engineering Program Plan, Contract F04695-67-C-0092, 27 Jul 67.

301. Briefing Charts, subj: Standard Agena, 28 Jul 67.

302. SAMSO (SMVA) Ltr to SMCS (Gen Martin), subj: Agena D Contract Structure, 2 Aug 67.

303. SAMSO (S Q) Ltr (C/Gp4) to SAFSP (Gen Martin), subj: Improved Agena Flight Test, 11 Aug 67.

304. DAR (SP-1) Ltr (C/Gp3) to SMI-2 (Gen Cooper), subj: Improved Agena Flight Test, 14 Aug 67.

305. SAMSO (SMV) Ltr to SAFSP (Gen Martin), subj: New Production Management Concept for Agena, 22 Aug 67.

306. DAR (SP-1) Ltr (C/Gp3) to SMI-2 (Gen Cooper), subj: Improved Agena, 30 Aug 67.

306a. SAMSO (SMI-2) Ltr (C/Gp3) to SMCS (Gen Martin, subj: Improved Agena, 7 Sep 67.

306b. DAR (SP-1) Ltr (C/Gp3) to SMI-2 (Gen Cooper), subj: New Production Management Concept for Agena, 8 Sep 67.

306c. Memorandum for Gen O'Neill (C/Gp4) sgd MajGen Paul T. Cooper, subj: New Production Management Concept for Agena, 18 Sep 67.

307. MR, sgd LtCol Allen J. Foor, subj: Custom Agena Briefing to Gen Martin, 19 Sep 67, w/1 Atch: Briefing Charts, subj: Custom Agena.

[illegible] ([illegible]) to [illegible] (Gen Cooper), subj: Procurement [illegible] Aug 67.

[illegible] ([illegible]) [illegible] (Col F. C. Morris, Jr), subj: [illegible] [illegible] III [illegible] of the Agena Program Office, 10 Oct 67.

[illegible] ([illegible]), Cite [illegible] 36065, 182134Z Oct 67.

[illegible] ([illegible]) Ltr (Uncl w/o S/Gp3 Atch) to SP-15B (LtCol Wheeler, [illegible]) [illegible] Flight Summary, 25 Jan 68, w/1 Atch same subj.

[illegible] ([illegible]-15) Ltr to SAF, subj: Final Agena Historical Report, 1 July - 15 October 1967, 15 Apr 68.

[illegible] List of Contracts (containing Estimated Face Value) (C/Gp4), subj [illegible] Vehicle, undated.

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PP RJWZBK
DE RJWZKD 64
P 052324Z
FM HQ USAF
TO RJEZFF/AFSC ANDREWS AFB MD
INFO RJWZKF/SSD INGLEWOOD CALIF
RJEDSQ/AFLC WPAFB OHIO
RJESBN/WRAMA ROBINS AFB GA
BT
~~CONFIDENTIAL~~ FROM AFSSV-EQ 90915
ACTION AFSC FOR SCQM. INFO SSD FOR SSDX. WRAMA FOR WRU. REFERENCE IS MADE TO AGENA D PRESENTATION BY COL. KUCHEMAN AT HQ USAF ON 3 JANUARY 1962. THIS MESSAGE IN 7 PARTS. PART I. PROGRAM MANAGEMENT, ORGANIZATION, PRODUCTION PLAN AND FACILITIES PLAN FOR THE BASIC AGENA D ARE CONCURRED IN. PART II. TOOLING, INDUSTRIAL FACILITIES AND MANUFACTURING TEST EQUIPMENT WILL BE PROVIDED FOR PRODUCTION CAPABILITY OF FIVE VEHICLES PER MONTH. YOU ARE AUTHORIZED TO PERMIT LMSC TO SCREEN INDUSTRIAL RESERVE AND PLACE HOLDS IMMEDIATELY. TO MAXIMUM EXTENT POSSIBLE MACHINE TOOLS AND TEST EQUIPMENT

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SHOULD BE OBTAINED FROM THE INDUSTRIAL RESERVE. SUPPLY CONTRACT TERMINATION INVENTORIES SHOULD ALSO BE THOROUGHLY SCREENED FOR USEABLE TEST EQUIPMENT. PART III. PROCUREMENT OF A MAXIMUM QUANTITY OF 39 VEHICLES SCHEDULED AT A RATE NOT TO EXCEED FOUR PER MONTH UNDER THE FOLLOW-ON CONTRACT IS APPROVED. FUNDING FOR NECESSARY LONG LEAD TIME ITEMS WILL BE WITH FY-62 FUNDS. CONTRACTOR COMMITMENTS WILL BE HELD TO A MINIMUM CONSISTENT WITH PROTECTING CONTRACT DELIVERY SCHEDULES. PART IV. INDUSTRIAL FACILITY AND SUPPLY CONTRACT FUNDING AUTHORIZATIONS NECESSARY TO SUPPORT THE ABOVE DIRECTED AGENA D PROGRAM ARE SUBJECTS OF SEPARATE ACTIONS. PART V. VEHICLES ON THE FOLLOW-ON CONTRACT WILL USE THE PRIORITY ASSIGNED TO PROGRAMS USING AGENA D. PART VI. PRESENTATION OF PERTINENT TERMS OF INITIAL CONTRACT AS REQUESTED IN PART IV OF HQ USAF MESSAGE AFSPN TO AFSC DATED 22 NOVEMBER 1961 WILL BE SCHEDULED AT HQ USAF ON 19 JANUARY 1962 AS AGREED IN ABOVE REFERENCED PRESENTATION. PART VII. THIS HQ HAS GREAT RESERVATIONS RELATIVE TO SSD'S PLANS TO HAVE INDIVIDUAL USING PROGRAM OFFICES PROCURE HARDWARE AND SERVICES ASSOCIATED WITH INSTALLATION AND CHECKOUT OF MISSION PECULIAR ITEMS DIRECT FROM LMSC. CONCERN IS THAT HAVING NUMEROUS OFFICES CONTRACTING WITH, AND GIVING DIRECTIONS TO, LMSC WILL NOT PROVIDE

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THE NECESSARY PROGRAM COST CONTROL TO TAKE FULL ADVANTAGE OF THE AGENA D STANDARDIZED CONCEPT. AN ALTERNATE APPROACH WOULD BE TO PLACE RESPONSIBILITY FOR PROCUREMENT OF AGENA MISSION PECULIAR EQUIPMENT AND ASSEMBLY AND CHECKOUT SERVICES UNDER ONE OFFICE AT SSD. SUCH AN ARRANGEMENT IT IS BELIEVED WOULD PLACE THE AIR FORCE IN THE MOST FAVORABLE NEGOTIATING POSITION RELATIVE TO THE CONTRACTOR AND ENHANCE THE AIR FORCE ABILITY TO CONTROL PROGRAM COSTS FOR ALL PROGRAMS. ALSO OF CONCERN IS THE NEED FOR CONTROL OF MODIFICATIONS IN CONNECTION WITH INSTALLATION AND CHECKOUT OF MISSION PECULIAR ITEMS TO INSURE THAT THE BASIC AGENA D STANDARDIZED CONCEPT IS NOT COMPROMISED. IN LIGHT OF THE ABOVE, REQUEST AFSC PRESENT DURING THE 19 JANUARY PRESENTATION AT HQ USAF THE SSD ORGANIZATIONAL ARRANGEMENTS WHICH WILL PROVIDE FOR MAXIMUM COST AND CONFIGURATION CONTROL OF AGENA VEHICLES BY INDIVIDUAL PROGRAM AND COLLECTIVELY FOR ALL PROGRAMS.
BT
05/2329Z JAN RJWZKD

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DOD DIR 5200.10

AF 04(695)-21

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SSX 5 January 1962

MEMORANDUM FOR RECORD

SUBJECT: Briefing to Dr. Charyk

Attendance List

Dr. J. Charyk
Dr. B. McMillan
Mr. Imirie
Mr. D. Jackson
LtGen Ferguson
MajGen Holzapple
BrigGen Curtin
BrigGen Smith
Col Sinex
Col Mare
Col Kucheman
Col Fletcher
LtCol Keeffe
LtCol E. Blum
Maj Erwin
Mr. F. O'Green

1. At 0900 hours, 3 January 1962, Colonel H. B. Kucheman, Jr., briefed Dr. Charyk and the above listed attendees on the Program Plan for Program 662A, as directed by Hq USAF message AFSDC-F 82350. Mr. F. O'Green of LMSC also gave a short status report on the program progress to-date.

2. As Colonel Kucheman started the introduction, Dr. Charyk interrupted to ask about a SSD message to Hq AFSC concerning support of the Discoverer and other Thor boosted programs. He asked if the Agena D was unable to meet scheduled launch dates or was it a Thor problem. Members of the Air Staff were vaguely familiar with the problem and explained that the shortage of Thor boosters apparently will necessitate allocation of the available boosters to the Discoverer program and conjectured that this might result in a shortage of Thor boosters for NASA programs. Colonel Kucheman indicated that although he was not familiar with the Thor procurement status or the SSD message, progress and schedules would indicate that Discoverer would not be Agena D limited.

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3. Colonel Kucheman presented the management channels and organizations approved by AFSC and specifically set up to accomplish the expedited schedule of the Agena D. The plan was accepted, as presented.

4. The SSD approved composite launch schedule, Agena D, DD-250, and final assembly schedules were explained in detail and accepted without discussion. Particular emphasis was made of assignment of the initial twelve vehicles to Discoverer and the fact that SSD had thoroughly "scrubbed" the launch schedule eliminating all questionable DOD requirements and deleting NASA in toto. Mention was made of the forthcoming 15 January briefing to NASA and the fact that their requirements would not be known until that time.

5. Mr. O'Green next gave the status report, indicating some problem areas, such as, wiring drawing release, sub-contract items in short supply, and late design freeze. Regarding the latter, he emphasized the problems involved but stated they were working hard to overcome these problems. Next he described the characteristics of the drawings and specifications being used and indicated that they were adequate for Agena D manufacture but did not fully comply with military specifications. The description he gave made it sound as if the Agena D "skunk works" drawings were superior to military specifications and that the LMSC manufacturing personnel liked them very much. His statements were, at best, biased. The drawings being used are LMSC drawings, they do not fulfill the military specification format and reproducibility requirements but are considered by the program office to be adequate for manufacture and in conformance with our Hq USAF directives. Mr. O'Green next stressed the fact that LMSC had been fully funded and was on a "spoon-fed" basis to-date. He concluded presenting a status of sub-contracts, and a total weight-statement-comparison between a Discoverer Agena D and Discoverer Agena B. The Agena D version was shown to be lighter by six pounds.

6. Colonel Kucheman, indicating that the next item was in direct response to direction received from Hq USAF, then gave a discussion on the industrial facilities required to support the Agena D program assuming as a basis for the study that creation of a separate manufacturing facility at LMSC was desired. It was pointed out that the recommended plan was a compromise between the extreme of achieving maximum economy and the extreme of complete segregation of facilities. The assumptions and conditions of the study were identified as, continuing to utilize the extremely large machinery in Building 103,

augmentation of the existing qualification and reliability testing facilities in Building 102, and Santa Cruz testing facilities, etc. It was acknowledged that the basic program would be accomplished before any additional facilities were scheduled to be available. A general discussion followed and Mr. Imirie stated he would like Mr. Don Jackson to look into this after the briefing. Factors covered included production requirements and differences between facility costs for three, four and five vehicles per month. Mr. O'Green was excused from the presentation at this point.

7. In presenting the programming and fiscal section, Colonel Kucheman gave the responsibilities of the Agena D Program Office and those of the using program office. He stressed the fact that the using program would pay for the vehicles at time of delivery, defined as "the month of acceptance (DD 250) by the Agena D office." He stated that the program office would incrementally fund for the optional and mission peculiar equipments which would be procured under the mission peculiar contract. It was stated that at the present time, consideration was being given to the possibility of procuring and stocking selected items of the optional equipment under the Agena D contract and that a decision was expected on the procurement procedures in the near future. A discussion followed concerning what was being installed in the Agena D on the production line. It was stated that just a basic Agena D would be produced and would be customized only to the extent of selection of a FM/FM or PAM telemetry system before acceptance. Mr. [redacted] stated this was not our present experience on current booster programs and that no doubt the request for additional program modifications would creep into the production line. He was assured that installation of optional and mission peculiars on the Agena D line was not planned; however, we could not pre-judge the future. Certainly it was our intention to make every possible effort to preserve the standardized agena concept.

8. Colonel Kucheman reiterated the SSD intention to effect program peculiar mods, systems test and launch under the individual LMSC contracts for each program. At this point both Mr. Meyers and Dr. Charyk pointed out that this approach was contrary to their understanding of the Standard Agena concept. They both stated that they wanted all mods to be made under a single contract and proposed using the Agena contract.

9. An extended discussion of the responsibilities of the Agena D and other program offices ensued. At first it appeared that Mr. L. Meyers, Mr. Imirie, and Dr. Charyk had misunderstood the basic concept of the

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Agena D. As it turned out, they were thinking of an extension of the concept wherein the Agena D contract should be responsible for the procurement optionals and mission peculiar equipments and program mods. Their concern stemmed from their apparent desire to have one man with complete control over the whole area. Colonel [redacted] pointed out that this was General Ritland's responsibility and that the mission program directors were individually responsible for the optional and peculiar items selected to accomplish their individual missions. Further, it was pointed out as a personal opinion, that "to deprive the program office of this responsibility was contrary to our organizational structure and would render the program office impotent."

10. As a result of the exchange of comments and the general opposition voiced by the SSD representatives and General Smith, Dr. Charyk apparently modified his position and stated that if it were not feasible to have the Program 662A Directorate fulfill this role, a single point of contact to work with the 662A Program must be established. General Smith voiced the opinion that it should be the AFPR and Colonel [redacted] again pointed out that General Ritland and Colonel Evans now serve in this capacity.

11. Dr. Charyk directed that Colonel [redacted] advise General Ritland that he desired that an SSD management plan for the procurement of optional equipment and mission peculiars be provided him when the pre-negotiation was brought to Washington for his review, (tentatively 19 January 1962). The management plan should consider both technical and contractual responsibility and clearly spell out the procedures to be utilized to preclude the recurrence of overhead and personnel cost being shifted among USAF programs by LMSC after program adjustments, i.e., Program #1. Dr. Charyk cited several examples where it had apparently cost additional funds to delete launches and cancel programs. It is obvious that the requested plan cuts across all SSD programs using the Agena stage and therefore should be a well thought-out and coordinated document.

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12. Colonel [redacted] next showed a chart giving a detail comparison between the 17 November 1961 ROM (39.9) and the firm proposal, as received 15 December 1961 (39.6). He indicated where the changes were. He advised the group that a pre-negotiation briefing was planned for 19 January 1962 at SSD and invited the interested members of the

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Air Staff to attend. This would be SSD's compliance with Hq USAF message AFSDC-F 82350. After a brief discussion, Dr. Charyk stated that because of the wide interest in the Air Staff on this contract, it was his desire that the 19 January briefing be given in the Pentagon.

[redacted]

14. At this time Dr. Charyk indicated that he had an 1100 appointment and requested that the recommendations be presented as briefly as possible. This was done and after reviewing the four recommendations Dr. Charyk indicated agreement in principle and requested Mr. Lew Meyers and Mr. Don Jackson to stay and review in detail the fiscal aspects and facility requirements.

15. The meeting adjourned at 1110 hours. There were several favorable comments made concerning the presentations by the attendees.

16. Immediately following Dr. Charyk's departure, the portions of the briefing pertaining to funds and facilities were again reviewed. Mr. Jackson, after numerous questions, indicated he was satisfied with the facility package and that he would recommend approval to Mr. Imirie. He commented that the production rate of 4/month was appropriate and that facilities to permit a production rate of 5/month was logical. Colonel Kucheman reminded him that a decision on the package was needed as soon as possible in order to permit the appropriate enabling clause to be inserted in the -21 and -68 contracts. Mr. Jackson left to consult with Mr. Imirie. Mr. Meyers continued his inquiry into the fiscal requirements for long lead follow-on buys. After inspecting our

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method of determining these funds he attempted to draw a comparison using Colonel Phillips' technique and planning factors for Atlas to prove the point that the FY 1962 requirement for [redacted] was excessive. Using Mr. Meyers factors, the need was computed to be [redacted] At this point the meeting broke up with Mr. Meyers requesting that the long lead fund requirements be re-computed and re-submitted. Mr. Meyers also indicated he planned to recommend the follow-on contract be funded with 200 series monies. It was later learned that Mr. Hoover disapproved this recommendation.

17. A telephone call was made to SSD (General Greer) to relay the result of the meeting.

18. At 1410 hours Colonel Kucheman and LtCol Keeffe were requested to meet with Mr. Don Jackson. A discussion followed which lasted approximately one hour covering the results of Mr. Jackson's meeting with Mr. Imirie. Mr. Jackson indicated that Mr. Imirie wanted to threaten LMSC with second-source procurement and/or work out some incentive fee formula which could be used as a lever to control the contractor. It was pointed out that the whole proposition of second source had been thoroughly studied and reviewed by both Dr. Charyk and Dr. Rubel with the conclusion that second source was neither feasible nor desirable at this time. We assisted Mr. Jackson in preparing a written memorandum to Mr. Imirie pointing out what had occurred. In the memorandum Mr. Jackson recommended adoption of our recommendations in detail. Mr. Jackson additionally recommended that the test equipment inventory and industrial reserve of machine tool be thoroughly reviewed to attempt to reduce the cost.

19. Colonel Kucheman requested LtCol Keeffe to prepare a message summarizing the results of the day's activity. Departed Pentagon at 1530 hours.

SIGNED

HENRY B. KUCHEMAN, JR
Colonel, USAF
Deputy for Agena

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HEADQUARTERS
SPACE SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
Air Force Unit Post Office, Los Angeles 45, California

REPLY TO
ATTN OF: SSXD/SV/Col Kucheman/21253

SUBJECT: Fund Requirements for Program 662A 11 January 1962

TO: See Distribution

1. On 3 January 1962, Dr. Charyk, Under Secretary of the Air Force, was briefed on the status of Program 662A. During the course of this briefing, the fiscal requirements for the basic (-21) and follow-on (-68) contracts were described in detail. The follow-on contract requirements had been computed, assuming a production rate of 5 Agena D's per month. Mr. Meyers challenged the magnitude of cost ($16M) and asked for a detailed justification. It was explained that if the production rate were adjusted downward to 4 vehicles per month, as had developed in the discussion, the long lead-time requirement would be reduced to $13M. After subsequent discussion, Mr. Meyers requested that we recompute this requirement and have it available when he visited the West Coast on 9 January 1962.

2. In the intervening period, approval of the recommendations concerning organization, management channels, production rate, number of vehicles to be procured, and facilitization for a production rate of 5 per month was approved by Hq USAF. No funds were provided, however, for it was indicated that they would be forthcoming by a separate message. A follow-up conversation with Lt Col Keeffe revealed that Hq USAF was in the process of releasing a message citing both reimbursable funds and Discoverer Program money to meet the fiscal needs of Program 662A. I requested Lt Col Keeffe to enjoin the Air Staff not to dispatch the message until I had an opportunity to discuss our requirements with Mr. Meyers.

3. On 9 January, Mr. Meyers, Hq USAF, Col Eugene Phillips, Hq DCAS, and I spent about an hour going over the fiscal requirements for Program 662A and specifically discussed the following points:

[redacted]

b. The next point discussed pertained to the technique of funding, i.e., the degree to which reimbursable funds would be used. Pointing out the advantages and disadvantages of mixing programmed funds and reimbursable funds and analyzing each, I made the recommendation that

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DOD DIR 5200.10

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[redacted]

[redacted]

[redacted]

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e. The subject of funding the facility requirements came up, and I pointed out that the monies necessary for facilities were additive and were not provided for in any of the fiscal requirements cited above. Specifically, I pointed out that we needed authority to negotiate an enabling clause in the -21 Contract (not to exceed [redacted] and that we fully expected to be able to reduce this cost substantially below the requested limit. Mr. Meyers asked Col Phillips to check-out the legality of negotiating the enabling clause without actually providing funds which could be obligated. As I understood his question, he wanted to establish whether monies legally must be set aside to cover the full extent of the enabling clause, or whether only the actual requirement need be covered at the time the expenditure was approved. Further, he indicated that Hq USAF was anticipating that the total cost of facilitization of Agena D would be reduced to a total cost between [redacted] by making maximum utilization of industrial reserve machine tools and test equipment currently available as a result of numerous Government contracts recently having been terminated. Col Phillips acknowledged that he would check out the legal question concerning the enabling clause.

4. I summarized the meeting indicating that:

[redacted]

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c. That Col Phillips, assisted by the Program 662A Office, would prepare the schedule against which using programs should transfer funds to the Agena D Program to amortize development costs.

d. That a unit cost of [redacted] per vehicle would be utilized until R & D cost for the Agena D was amortized.

e. That the requirement for [redacted] for the follow-on (-68) contract was recognized.

5. Mr. Meyers and Col Phillips acknowledged my summary, and I suggested that the results of our meeting be reviewed by Gen Greer. Mr. Meyers indorsed this recommendation and made an appointment with Gen Greer.

6. In the meeting which followed immediately, the results of the conference described above were given to Gen Greer and Col Evans by Mr. Meyers, Col Phillips, and myself. I specifically pointed out the following: (1) the difference in unit cost proposed by Mr. Meyers;

(2) the changed technique of using reimbursable funds; (3) the intention of amortizing cost among using programs; and (4) the intention to direct the reprogramming of using program monies to an Agena D line item. Col Evans requested Mr. Meyers to direct us to use the [redacted] programming factor, and Gen Greer and Col Evans both indicated concurrence in the agreements reached.

Henry B. Kucheman
HENRY B. KUCHEMAN, JR
Colonel, USAF
Director, Program 662A

DISTR:
Gen Greer
Col Evans
Col Phillips
Col Battle
Maj Hagerle

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HEADQUARTERS
SPACE SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
Air Force Unit Post Office, Los Angeles 45, California

REPLY TO
ATTN OF: SSZDT/Capt. Sherline/ZAD 4028

SUBJECT: Sole Source Justification for Complexes 75-3 and 75-1 . 18 JAN 1962

TO: SSVX (Mrs. Arnold)

3-19

1. The authority to modify the Discoverer complexes at Vandenberg AFB, 75-1 Pad 1 and 75-3 Pads 4 and 5, to the Agena D configuration was received on 4 Dec 61. The launch schedule calls for the first Agena D launch in June, 1962, with Agena D launches each month thereafter. LMSC is currently under contract for the necessary LMSC changes to the launch complexes, and it is now necessary to place the Douglas Aircraft under contract to accomplish the changes required by Douglas based on criteria supplied by LMSC. In light of the short time span to accomplish these changes prior to the first scheduled Agena D launch, it is imperative contractual action be taken immediately with Douglas as a sole source contractor.

2. It would be impossible for any other contractor than Douglas Aircraft to accomplish the modifications in the short time span required, for the following reasons:

a. Complex 75-1 and 75-3 were constructed by Douglas.

b. The complexes are maintained by Douglas.

c. The engineering and drawings are available at Douglas.

d. The modifications to the launch complexes are to equipment designed and built by Douglas.

e. Douglas is the only contractor familiar enough with the complexes to be able to start work immediately and thus meet the launch schedule.

3. Because of the intimate working relationship between LMSC and DAC developed over the years of the Discoverer Program, much of the engineering and work has been done on an informal basis. This information

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and detail would not be readily available to any other contractor. In our opinion, it would be impossible for any other contractor to do the modifications without considerable additional time and effort in duplicating what has already been accomplished by DAC.

for
C. L. BATTLE
Colonel, USAF
Director
DISCOVERER Satellite System

SSXD. [illegible]

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18 JAN 1962

SSXDA

Agena D Performance Data

SSZXE (Major Lochry)

1. Performance information on the Agena D must be considered as preliminary at this time until completion of manufacturing effort on the first vehicles. The performance parameters are sufficiently like the Agena B that performance analyses for that stage can be used. Errors would appear only in the burnout weight of the Agena D stage and totals based on it.

2. The following performance is available from Atlas-Agena D launch vehicles.

At 90 mile Circular Polar Orbit	Without Restart	With Restart (200# propellant)
Injection wt	6750	6500
Propellant & residual wt	110	310
Useable wt	6640	6190
Agena D wt	1500	1500
Available wt for mission peculiar equipment	5140	4690

The possible variation in Agena weight from that shown in the table is ± 50 pounds. Variation of perigee altitude causes an inverse effect on payload with a loss of 200 pounds in burnout weight in changing from 90 to 120 nautical miles perigee. The effect of eccentricity is to decrease capability 50 pounds if .005 is desired. Variation of payload with orbital inclination is from a 100 pound increase to a 300 pound decrease over the tabulated numbers as inclination varies from 5° prograde to 15° retrograde. Both numbers depend on method of achieving the orbit, so they must be considered estimates.

SSXDA/Capt Fiebelkorn/dd

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DOD DIR 5200.10
13 Jan 62

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3. Orbital lifetime is very sensitive to altitude and eccentricity in the ranges specified with as much as an order of magnitude variation in life from the lowest to the highest perigee altitude. The specific number of orbits that the vehicle would make is also sensitive to latitude of injection for these limited life orbits. An approximation of the life, no better than 50% accurate at this time, is 27 orbits for the 90 nautical mile injection and 230 orbits for the 120 nautical mile case giving a life of 1.6 and 13.9 days respectively.

SIGNED

HENRY B. KUCHEMAN, JR
Colonel, USAF
Deputy for Agena

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MEMO ROUTING SLIP

NEVER USE FOR APPROVALS, DISAPPROVALS, CONCURRENCES, OR SIMILAR ACTIONS

ACTION

1 TO

SSG (General Ritland)

INITIALS

CIRCULATE

COORDINATION

2

FILE

INFORMATION

3

NOTE AND RETURN

PER CONVERSATION

4

SEE ME

SIGNATURE

REMARKS

We are fully funded (FY62) now —

FROM

Colonel Kucheman
SSX

DATE
25 Jan 62

PHONE
3084 R&D

DD FORM 1 OCT 60 95 Replaces DD Form 94, 1 Feb 50 and DD Form 95, 1 Feb 50 which will be used until exhausted.

★ GPO: 1960—0—[illegible]

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SSX 23 January 1962

MEMORANDUM FOR RECORD

Information was received this date through LtCol Keeffe, Hq USAF, and Capt Santone (DCCBS), to the effect that a BA for 31.4 million dollars of reimbursable P-630 money for Agena D (662A Program) is being mailed this date. These funds are on Budget Authorization #38, dated 23 January 1962, from Hq AFSC.

SIGNED

HENRY B. KUCHEMAN, JR
Colonel, USAF
Deputy for Agena

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SSX 24 January 1962

MEMORANDUM FOR RECORD

SUBJECT: 18 January - 19 January Agena D Briefing

1. In response to Hq USAF messages of 5 and 11 January, cite AFSSV-EQ 90915 and AFSSV-EQ 92056, Colonel Fletcher, Mr. Silberman and I briefed MajGen Mitchell, Colonel Nudenberg and Colonel Sinex, Hq AFSC, on 18 January, MajGen Thurman, MajGen Holzapple, BrigGen Smith and members of the Air Staff at 0900 hours 19 January, and Dr. Charyk, Mr. Imirie, MajGen Thurman, BrigGen Smith, BrigGen Curtin, Mr. Warren, Mr. Lew Meyer, and Mr. Don Jackson at 1100 hours on 19 January.

2. General Mitchell received the briefing without criticism and approved it for presentation to the Air Staff. General Mitchell acknowledged that he understood that the AF position which had been established by Hq SSD was the "going-in" position and, therefore, subject to change by negotiation. Additionally, he complimented the Division for diligently striving to comply with the Hq USAF guidance for the fee formula. I requested MajGen Mitchell to relay his comments to General Thurman via telephone since he would not be able to personally attend the meetings scheduled the following day. He indicated he would be glad to convey his comments to General Thurman. No members of the Hq AFSC procurement staff were in attendance. It was explained that the "SSD organizational arrangements" requested by Part VII of the 5 January Hq USAF message had been deferred as a result of LtGen Estes call to MajGen Holzapple on 17 January and would not be presented to the Air Staff or Dr. Charyk.

3. General Thurman reviewed the Pre-Negotiation in detail, asking many questions and making several recommendations. His reaction and comments are summarized as follows:

a. General Thurman indicated surprise that the presentation was a pre-negotiation briefing, stating that he had expected to hear "what had been negotiated with Lockheed." Colonel Fletcher explained that we were anxious to receive their guidance and comments before rather than after-the-fact in order that the negotiation could represent their views and still be negotiated in Los Angeles. General Thurman acknowledged our reasoning as being sound and appropriate.

DED AT 3 YEAR INTERVALS;
SIFIED AFTER 12 YEARS.
DOD DIR 5200.10

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b. He indicated surprise when informed that the first flight article was scheduled for final assembly acceptance test on 16 April and commented that he thought first delivery and not first launch was in June. In the ensuing discussion, he at first appeared to question the wisdom of continuing on the CPIF approach to the contract, indicating that he would like to "ruminate over" the approach pending the briefing to Dr. Charyk.

c. He recommended that the same "floor" be established for "schedules" as would be negotiated for "cost" and "performance" criteria, i.e., -1%. This had the effect of changing the minimum fee to -1% across the board in the SSD position. He then complimented the logical approach being proposed and approved the briefing for presentation to Dr. Charyk indicating he would be present. General Holzapple had no specific comment or criticism.

4. As in the case of the previous two briefings, the briefing to Dr. Charyk was preceded by a status report. The items covered in the status report were as follows:

a. NASA reaction to the 15 January Agena D Design Review -- generally favorable, fulfilled major NASA design objectives, detailed comments expected in two weeks.

b. Financial guidance under which SSD was funding the Agena D -- This material was reviewed in detail. The presentation resulted in expressions of amazement and the comment "that this was the first time an R&D program had been conducted 'without funds'." The comments were jocular in nature. Mr. Meyer explained the necessity for the actions being taken. Dr. Charyk indicated concurrence. Subsequently, LtCol Keeffe indicated that we could expect to receive a Budget Authorization for the required 31.5M FY-62 reimbursable funds by 22 January 1962. (SEE ATCHD.)

c. The third status item consisted of a brief review of the actions taken (and contemplated) by the Program Office concerning industrial facilities. Our intention to negotiate an enabling clause of 4.449M in the -21 contract was pointed out. It was explained that we hoped to reduce the actual fund requirement to not in excess of 2.0M by acquisition of machine tools and test equipment through the industrial reserve review action. Dr. Charyk nodded concurrence. It is understood that Mr. Don Jackson has prepared a PA protecting our 4.449M

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requirement for facility funds. I was not informed when we may expect to receive official notification of Hq USAF action, however.

5. Colonel Fletcher, as previously, then presented the pre-negotiation briefing incorporating MajGen Thurman's guidance. At the point in the briefing where "product improvement" funding was analyzed, Mr. Meyer raised the question as to exactly what was intended by "product improvement." This question precipitated about a 15 minute discussion on whether the Agena D was to be "product improved." Our intentions were thoroughly discussed and analyzed. At first, Dr. Charyk appeared hostile and Mr. Imirie and MajGen Thurman commented that we were already planning modifications to the "Standard'Agena. I explained the need for continued studies of our known weaknesses and emphasized that we desired to improve the reliability of the Agena D over that which I personally expected to result from "production engineering" the Agena B. Specifically, I pointed out that the rapidity with which the design had to be frozen made it mandatory that we re-package and utilize many Agena B qualified components without improvement. Additionally, that the product improvement efforts would be a level of study effort, rigorously controlled by funds and further that all items to be studied would receive prior concurrence by the Air Force Program Office. It was pointed out that none of the activity under this section of the contract would receive incentive fee or produce hardware in time for inclusion in the basic contract. After this explanation, Dr. Charyk acknowledged the need for what is in our contract with the provision that it be rigorously controlled and that the first 12 vehicles be made as nearly indentical as possible.

6. There was considerable discussion over the incentive fee formula. General Thurman gave a detailed analysis of the pros and cons of CPFF versus CPIF and recommended CPIF. Dr. Charyk approved the SSD pre-negotiation position and directed that we proceed. As he was leaving, he commented in passing that he anticipated that this would be a "hard position" to negotiate.

7. General Smith left the room with Dr. Charyk and later returned to inform his staff, Colonel Fletcher, and me that Dr. Charyk and Mr. Imirie were complimentary in their remarks to him concerning both the briefing and the recommended position. The briefing was concluded at 1245 hours.

SIGNED

HENRY B. KUCHEMAN, JR
Colonel, USAF
Deputy for Agena

SSX-6

SSVZL/ Capt Johnson/ OS 9-3661-[illegible]

Additional Instrumentation on Discoverer Flights 5 February 1962

SSD (Maj Moore)

1. Reference your note, 25 Jan 62, same subject. The original investigation of the 20 CPS problem on Discoverer flights called for additional instrumentation to be installed on seven flights. The first four of these had the instrumentation installed in order to obtain data necessary to define the problems and determine the extent of same. This data, and the results of the separate tests run by HAA/Rocketdyne, indicated that a modification to the LOX pump inducer would reduce or eliminate the oscillation. The last three flights of the group utilized the added instrumentation to investigate several suspect areas, and to determine the effect of the inducer modification.

2. As you well know, the inducer modification had no effect on the problem oscillation, although Rocketdyne believes it has resulted in a smoother running engine. Because the problem continues to exist, the D/C-R/HAA study group has requested that additional instrumentation be carried on three more Discoverer flights. Essentially this program is an experimental one designed to identify the probable cause factors. No guarantee of results can be made, however, it is very possible that the data obtained could provide a possible solution for the problem. This office recommends that you authorize the installation of the additional instrumentation considerin it from the viewpoint of eliminating a potential problem area. Your decision, of course, must be based on other factors, such as the deleterious effects on the Agena vehicle, payload requirements, extent of the Discoverer program and costs (the last three installations cost about $4,500 per bird, not including TLM ($13,000) which is GFE). Therefore our budget estimate is $17,500 each, and $52,500 total for three.

3. Request that you inform this office as soon as possible of your decision on whether or not you desire to continue the investigation of the 20 CPS problem.

ROBERT L. BEERS
Lt Colonel, USAF
Director, Standard
Launch Vehicle II

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SSXD 14 February 1962

MEMORANDUM FOR RECORD

SUBJECT: Discussions with Mr. O'Green and Staff, 13 February 1962

1. Subsequent to the Pipeline Meeting, I met with Mr. O'Green and discussed in some detail the following subjects with the results or agreements reached as follows:

a. I requested the status of:

(1) The Agena B versus Agena D Cost Comparison Study requested by telephone on 8 February 1962. Mr. Shoenhair indicated that the first cut of this study would be available 14 February, and that the latest systems run for the Discoverer vehicle indicated the total expenditure of 28,000 manhours.

(2) The Agena B versus Agena D Performance Comparison. Mr. Larry Edwards indicated that progress was being made; however, the material was not yet available.

(3) The Phasing Plan for transitioning from the -21 Contract to the -68 Contract. Mr. O'Green indicated that his plan was not yet completed, that he was still working on it, and that it would be discussed with his staff immediately following lunch.

b. I indicated that it was my feeling that the negotiations were "bogging down" and that I felt it necessary to establish what course of action LMSC recommended we follow if an impasse were reached. Mr. O'Green indicated his desire to have a meeting with Mr. Silberman and the other members of the team in one last effort to reconcile our differences. The meeting was scheduled for 1300 hours, 14 February 1962. I pointed out very directly to Mr. O'Green that the Air Force negotiator had been and would remain to be Mr. Silberman and that my presence in the meeting was not to be miscontrued for I, in no way, intended to take over the negotiations at this date. Additionally, it was pointed out that if we were unable to reconcile our differences, that I felt it was necessary to inform our respective chain of command because the passage of time had a definite influence on the appropriateness of the CPIF feature of the -21 Contract. At 1830 hours I contacted Colonel Harry Evans at SSD and informed him of the potential stalemate and our plans and requested that he give consideration to what procedures I should follow if no progress was made tomorrow. We again discussed the feasibility of re-energizing the Kelly Johnson committee to review the progress made to date and to make recommendations to guide the remainder of the program.

c. A discussion of the Evans' ad hoc committees on test philosophy versus the Agena D concept followed. It was pointed out that the questions posed by the creation of the committees had organizational as well as technical implications and that I desired to have the Lockheed Agena D staff provide me with information with which to respond to the questions being asked by the AFSSD program directors. Specifically:

(1) Why is the DD-250 vehicle acceptance test necessary if the using program must subsequently run an integrated systems test?

(2) To what degree can optional equipment be installed on the Agena D "standard" assembly line?

(3) Can using program ascent guidance cards be utilized in the "standard" Agena D systems complex, i.e., C-3, C-5, and face? If not, what changes are necessary to permit the inclusion of this requirement?

d. What portions of the acceptance test need not be repeated in the program integrated systems run? Considerable discussion ensued pertaining to test philosophy, etc., and Mr. O'Green summarized by requesting that Lockheed be directed to study the problem for approximately one month and submit their findings and recommendations to AFSSD. He acknowledged that many of the comments of the AFSSD program offices were valid but cautioned that the course of action which we were to follow had to be carefully and thoroughly thought out or all of the potential gains of the Agena D could be lost. I countered this comment indicating that it was my personal feeling that all of the LMSC Program offices had known since 7 November 1961 that the Agena D was to be integrated into their respective programs and that they should have taken the initiative and already identified the answers to the questions being asked. Further, I requested Mr. O'Green to discuss the problem with Mr. Hawkins and for Mr. Hawkins to contact Colonel Evans directly relaying the LMSC position. I subsequently learned that Col Evans and Mr. Hawkins had discussed the matter by phone. I do not know the results of the discussion, however.

e. After lunch the major portion of the afternoon was spent defining exactly what comprised the "procurement package." Mr. Joe Wingerd was detailed to prepare a memo for file of the results of this meeting. Basically, it was concluded that for the vehicle procurement package, the primary things which were necessary were the engineering drawings and the acceptance or test specifications for all components of the Agena D to include Agena B, Agena D, and the sub-contractor items. In connection with this discussion, the subject of configuration control was reviewed and the necessary Air Force regulations subsequently given to Mr. Gordon Tigue by Colonel Fletcher for inclusion in the -68 Contract (AD-13) to the Air Force Program Office, the procedures by which configuration control could be implemented.

f. Lastly, the subject of cost and manpower control was discussed. I made a request that Colonel Fletcher and I be given weekly status information pertaining to actual expenditures and manpower. Mr. O'Green countered this request, indicating that it was company proprietary information and that our DD-1097 should be our management control document. This resulted in a 20 minute discussion pertaining to the soundness of the information contained in the DD-1097 and an analysis of the accumulative commitment and expenditure chart used in the Pipeline meeting. I pointed out to Mr. O'Green that his control chart was in error, that in fact the end position for January 31 revealed that the Agena D Program was [redacted] expended against the original ROM projection, and that apparently the cost projection curves had been changed. Subsequent discussion with Mr. Phillips and Mr. Anderson revealed that this was in fact true and that the current cost projection curve reflected the planning used by Lockheed in their 15 December 1961 definitive quote. Against this curve, the end position for January represented approximately $1.5 million under the target. The future technique of presenting this information for analysis was discussed and agreed.

HENRY B. KUCHEMAN, JR
Colonel, USAF
Director, Program 662A

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[illegible]

20 FEB 1962

[illegible] Component [illegible]

[illegible] (Col [illegible])
[illegible] (Col [illegible])
[illegible] (Col [illegible])

[redacted]

SSXA

Lt Col Smith

12Feb62/vm

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If inclosures are withdrawn (or not attached) the classification of this correspondence will be Uncl

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5. The 8133 Engine and the 8153 Hot Gas Control system are placed last on the list, which is organized in order of priority. These developments represent a considerable outlay of funds and have not been established as firm requirements at this time. They should be considered in your long range plans.

6. It is requested that your program offices study the proposed development program with the intent of providing early funding so that this improved equipment may be placed in use as soon as possible.

SIGNED
HENRY B. KUCHEMAN, JR.
Colonel, USAF
Deputy for Agena

2 Atch
1. Proj List -21 Contract (U)
2. Improvements List w/Justification (C)

If inclosures are withdrawn (or not attached) the classification of this correspondence will be Uncl

SSIA-853

MEMORANDUM FOR RECORD 26 February 1962

SUBJECT: Staff Visit of Maj Gen Ritland and Mr Kelly Johnson

1. Gen Ritland and Mr Johnson visited the Agena D Program Office, LMSC, this date, to accomplish an on-the-spot appraisal of the progress being made and the LMSC approach to the design of the Agena D.

2. Gen Ritland and Mr Johnson began their inquiry by a question-and-answer session, singling out first, the undersigned, and second, Mr O'Green. They requested that I present, in my own words, the current status of the Agena D Program. A summary of the material which I covered is contained in the outline which follows:

a. Design. I reported that technical briefings and design reviews had been accomplished with appropriate echelons within NASA and SSD/Aerospace. To date no derogatory or critical comments had been received from either DOD or NASA sources. It was my impression that the approach being undertaken by LMSC, as it was understood by potential future users, was favorably reacted to. Naturally, any agency which was forced to accept a "standard anything" had reservations because they were unable to control the design. Ignoring this fact, I was encouraged by the lack of comment by anyone that we had failed to satisfy their requirements. I pointed out that NASA was currently reviewing the latest schematics and that we were promised the final position, i.e., the Agena D, within a week or ten days. The recent SSD ad hoc inquiries into the Agena D concept were described briefly; I indicated that I did not know the results. Gen Ritland commented that it was extremely important that the Agena D concept be preserved and that the program offices not be permitted to distort the concept at this time.

b. Impact of Weight Reduction Program. I reported that Mr O'Green's staff had found it necessary to essentially redesign their initial configuration twice in the period of time from November to date. This activity in itself had resulted in compression of an already compressed or accelerated schedule to the point that I was concerned that supporting tests, which were necessary to qualify components before flight, were being forced out of phase with production of flight articles. Secondly, because of the delay which had been induced, the cost associated with repackaging the Agena D would be adversely affected. I reported that the current weight was estimated to be 1278.6 pounds for AD-1 and 1265.9 pounds for AD-6 against a dry weight on orbit target weight of 1326 pounds.

c. Hardware:

(1) Functional Test Mockup (FTMU)/C-5. I indicated that the FTMU and the C-5 Complex had been kept on schedule and apparently were proceeding satisfactorily. No major faults or corrections had been reported to the Air Force Program Office.

(2) The Propulsion Test Vehicle Assembly (PTVA) had been given a hot firing last week which consisted of two burns and confirmed that the Orifice Pressurization System apparently was working satisfactorily. Detailed test data had not as yet been reduced or analyzed.

(3) The Structural Test Vehicle (STV) and Thermal Test Vehicle (TTV) have been fabricated and, though late, were now in test to date. No results of the test had been reported to me.

(4) AD-1. The installation and test of AD-1 had slipped approximately four days; however, the final assembly period was still scheduled for the 3-16 March period which preserved the original target for AD-1. I was concerned about the availability of the hydraulic package (Lear Mark III) which was scheduled for 15 March delivery for installation in AD-1 and concurrent qualification test. I pointed out that this hydraulic package was being developed by Lear for the Lockheed Agena B organization and being incorporated into the Agena D. This procedure was in conformance with the ground rule requiring that the most reliable components available be integrated into the Agena D. I mentioned that the backup Agena B hydraulic system (-11) was being prepared to maintain schedule if the derated Lear package did not meet expectations. Pertaining to the Barnes Horizon Sensor, I indicated that I had reservations concerning its potential performance, based solely on the fact that engineering data had not yet been acquired to confirm that it would function as advertised. I backed up this statement pointing out that Midas flight (1202) had produced data which was encouraging but not conclusive and that with the exception of the Mercury shot (wherein components of the Barnes Horizon Sensor had been flown), no other engineering test data in the space environment was available. It was stated that Program 101 and Discoverer flight 1225/6 should produce additional data prior to the first launch of AD-1. Additionally, that we were engineering an ATL backup design to cover Discoverer requirements.

(5) AD-2 and subsequent flight items. I indicated that all information known to me confirmed that AD-2 and subsequent vehicles were on schedule.

d. Negotiations. I simply stated that negotiations on cost were deadlocked and that we had not reached the point where any discussions on fee or fee formula had been initiated. Lockheed's counter offer had been obtained last week (31.4 to 29.85); the Air Force had adjusted its position from 25.5 to 28.0 for Items 1 and 2. Further, that I did not feel that Items 3, 4, and 5 were a problem and that the difference of opinion on Items 1 and 2 was caused by the T-1 cost "model" assumed by LMSC and the Air Force in arriving at T-1 cost. Mr Johnson inquired as to my role in the negotiations. I explained that Mr Silberman was the negotiator and the single person to whom the Air Force looked for this function and that my role was to insure that he had appropriate guidance on the technical aspects of the Program. Both Mr Johnson and Gen Ritland agreed that further delay was unnecessary and unwarranted in view of the

CPFF feature of the contract. Gen Ritland then directed me to contact Mr Silberman and establish Wednesday night (28 February) as the deadline for the consummation of negotiations.

e. Facilities. I reported that I had received information from Hq USAF which indicated that the Facility Package, necessary to give us the Building 152 posture for the Production Contract, had at last been obtained. I had received this information late Friday and that possibly Lockheed may not yet know it.

f. Planning on the Production Contract Drawings. I indicated that:

(1) We were now assured that suitable drawings, specifications, and procedures would be forthcoming from the -21 Contract to facilitate a fixed-price negotiation for the -68 Contract by 30 May 1962.

(2) We planned to use the Functional Test Mockup as a tool to rehearse a DD-250 Acceptance.

(3) Currently, Mr O'Green was exercising design control over the Agena D and that it was my intention to establish Air Force configuration control procedures for the Production Contract.

g. Logistics. I stated that I anticipated that we would have a spare part availability problem until the AD-5 time period. All indications were that the LMSC capabilities were being taxed to the utmost in meeting the AD-1 thru AD-5 flight article schedule alone.

[redacted]

i. Need for Component Improvement Program. I pointed out (and gained acceptance from both Mr Johnson and Gen Ritland) that the design of the Agena had of necessity progressed so rapidly that component engineering necessary to obtain .9 reliability had not been possible in the time period that had been allotted. In my judgment, it was necessary to identify the known weaknesses of the design and continue to work on them until the .9 reliability goal was attained.

3. Following the interview with me, Gen Ritland met with Mr O'Green and later with Mr Willis Hawkins to obtain their statement of the current status of the Program. Mr O'Green later indicated to me that Mr Johnson had taken him to task for not having produced "suitable production drawings" on the first go around and deplored the necessity for the CALAC effort to get the drawings in shape ($330,000).

4. I was invited to join the group for lunch among Gen Ritland, Mr Johnson, Mr H. Brown, Mr W. Hawkins, Mr D. Gribbon, and Mr O'Green.

[redacted]

significant savings were projected. This chart and presentation provoked considerable discussion and "analysis." Messrs Jack Shoenhair, Mr Gribbon, and Mr Hawkins jointly attempted to answer questions and frequently complained that the comparison was unfair or that we were attempting to compare apples and oranges. The end result of this discussion was a recommendation by Mr Johnson that a series of four charts be developed which would more nearly compare apples with apples. Where this was not possible, the differences between the Agena B configuration and the Agena D configuration should be clearly documented and costed out. Lockheed requested additional time to complete this new look, and Gen Ritland concurred, in principle, and stated that it would be unwise to present the information just reviewed in the format presented and that he would much prefer to take a delay in time in order to get these important considerations in proper perspective.

5. Following this discussion, Mr Johnson continued to "turn over a few rocks" and brought into the open the magnitude of the changes between Lot I and Lot II. He concluded by strongly suggesting to Mr O'Green that there not be any structural difference in the first 12 flight articles and that the duplicating programs test the structural integrity of Lot I and Lot II be combined and the Structural Test Vehicle Program aligned solely to evaluate the Lot II configuration. Most of the detailed discussion pertained to the Guidance Module and effect of design of interchangeability and produceability. Next, attention was directed to a design review of the hydraulic power package. Only general information was available; however, the discussion made obvious that some of the limitations of the current system which conceivably contributed to the problem were not being corrected in the derated design. During the above discussion, Mr O'Green called in most of the senior members of his staff.

6. At approximately 1515 hours Mr Johnson asked that all present, except Gen Ritland and myself, leave in order that we might talk with Col Voyles. Col Voyles was requested to present the current status as he saw it. He indicated his concern that the current design of the tank was not suitable for production and voiced his specific objection to the O'Green/Kucheman approach on the -21 Contract. When queried in detail, he could not substantiate his feeling that "we would not end up in the position to go into a Production Contract." Col Voyles was then excused.

7. Mr Johnson then summarized the results of the inquiry, and Messrs Brown, Gribbon, and O'Green were invited to rejoin the group. Prior to beginning the summary, Mr Johnson discussed the tank changes which were underway with Mr O'Green, Mr Gribbon, and Mr Brown. Summarizing his feelings, he stated unequivocally that it was his recommendation that the proven tank assembly not be tinkered with in order to save 12½ pounds. After a modest amount of discussion on this point, Mr Brown and Mr Gribbon concurred in the position stated by Mr Johnson. Mr O'Green attempted once again to point out the motivations for his decision to make the change, and Mr Johnson concluded the discussion by the summary statement: "Fred, I am not telling you to change your design of the tank; I am recommending to you that you not change a proven design for the sake of 12½ pounds." The specific items which Mr Johnson pointed out in his summary were:

a. Don't change the tank.

b. Jointly settle the negotiation by Wednesday night.

c. Keep all 12 flight items structurally alike. It is considered necessary to have some variance in black box configuration.

d. Redo the contract cost presentation (Agena B Discoverer vs. Agena D Discoverer) and resubmit.

e. Establish an adequate cost control system to permit the fixed-price Production Contract to proceed unincumbered.

f. Keep the Project Managers (meaning SSD/LMSC using programs) in line. In other words, don't change Agena D concept at this time.

g. Adequately fund the Agena D. It was pointed out that funding was due to run out on 18 March.

Gen Ritland acknowledged his concurrence in Mr Johnson's summary and recommendations. It is understood that Mr Johnson and Gen Ritland are to jointly submit a written report to Gen Schriever.

8. I drove Gen Ritland and Mr Johnson to the aircraft and, during this period, they indicated general satisfaction with the evidences of progress which they had seen; i.e., the hardware, morale, adherence to concept, etc., and despite their criticism of the specific items in the foregoing paragraphs, they felt that we were complying with the spirit and the intent of our charter.

Henry B. Kucheman Jr

HENRY B. KUCHEMAN, JR
Colonel, USAF
Director, Program 648B

~~CONFIDENTIAL~~

151

27 February 1962

General B. A. Schriever
Commander
Air Force Systems Command
Andrews Air Force Base
Washington 25, D. C.

Dear General Schriever:

On 26 February 1962, Maj. Gen. O. J. Ritland and Clarence L. Johnson visited the Lockheed Missiles and Space Company at Sunnyvale, California, as per your directive, to review the status of the Agena D program. We undertook to review, briefly, the following:

1. Were the basic 15 operating conditions set up for the Agena D program being complied with by LMSC and the Air Force.

2. What were the major problems currently being encountered on the program.

3. What were the areas of greatest technical risk.

4. What was the actual status of production of the vehicles.

5. What was the situation with regard to costs of the vehicle, with some reference to a comparison between the Agena D and the Agena B vehicles.

It was not possible, in the one day, to go deeply into these subjects, but it is felt that a very useful review of the program was obtained, with the following results.

BASIC OPERATING CONDITIONS

It was felt by Col. Kucheman, the A.F. project manager, Col. Jim Voyles, the A.F. Plant Representative, Mr. Fred O'Green, LMSC project manager, and Mr. Herschel Brown that both sides are adhering very well to the operating conditions set up for the Agena D in the meeting with yourself and Dr. Charyk at Sunnyvale in November 1961. Morale seems to be excellent and the relations between personnel appear to be very good.

IS DOCUMENT BECOMES UNC~~LASSIFIED~~
ON COMPLETION OF PROGRAM ~~CONFIDENTIAL~~

MAJOR PROBLEMS

In order of importance, major problems are:

1. Agreement on a contract, particularly the program cost.

2. Determination of the optimum method of introducing special program peculiar and payload items into the standardized Agena at optimum cost and at the proper time.

3. Development of reliable hardware in the areas of the fuel tank, horizon scanner, hydraulic system, inverter, velocity meter and control gas regulator.

4. Because of the compressed time schedule, LMSC was proceeding with two different structural designs, requiring two sets of static tests for each group of six of the first twelve vehicles. This procedure would have resulted in a very late evaluation of the structural integrity of the production units.

5. A tendency on the part of various A. F. and NASA program managers, not including the Agena D manager, Col. Kucheman, to impose changes in structure and basic requirements that are not beneficial to the basic Agena D in its original concept. This is particularly true of the SAINT group.

6. Lack of a clear understanding by LMSC of the cost comparison between the Agena B and the Agena D, in a form which would allow improved cost control.

We would like to discuss the above problems and certain recommendations concerning them. Most of these were discussed in the presence of the WSPO and LMSC personnel, but only on the basis of the recommendations being tentative, until and if you direct that action be taken on them.

DISCUSSION

The Air Force and the Contractor have been unable to agree on the cost of the program for the first twelve vehicles. Intensive discussions have taken place over a period of a month. The Contractor complains that he is unable to agree on a step-by-step approach to various contractual matters because the whole negotiation is constantly stirred up with no important progress being made. We believe that the negotiating group could be helped considerably if Col. Kucheman and Mr. O'Green would

[redacted]

Contractor also complains about the fact that some margin of cost must be available in order for him to include corrections, the need for which will show up during checkout and the flight of early vehicles. This is a normal and, in many cases, an expensive task. We did not have the opportunity to talk to the actual personnel engaged in the negotiations.

On the problem of introduction of payload and certain program peculiar elements into the production line, there seems to be no clearcut approach that is substantially better than others, at this time. We believe that this matter must be kept constantly under review, and that it will work out, as time goes on, if continuing study is given to each individual program and if the basic concept of the Agena D is not disturbed during early production. There may be means of making a transition in the production line to include various special items of equipment and thereby save overall time and cost in the long run, but it is not evident at this time how to do it on all programs, particularly when certain security aspects are considered.

In an effort to save twelve pounds of weight, LMSC had proposed reworking the Agena B fuel tank to change the gauge of the tank headers and remove fuel tank baffles. They had proposed that the tank headers be machined to within ± .0015". We consider this to be extremely difficult in production, and a net gauge reduction of .005" included at the same time is not worth the gamble involved.

The basic weight picture on the vehicle appears to be good, although it took a major redesign late in the program to obtain their current weight status. It appears that without reworking the Agena B tank, the vehicle will still be 40 to 50 pounds under the specification weight. In the interest of reliability and cost, we do not believe this change is warranted.

The horizon scanner and velocity meter both continue to be in technical difficulties. Col. Battle has instituted a backup program on the Barnes unit with ATL. There is still a question in our minds as to whether there is sufficient effort being put out on the basic problems of the horizon scanner.

The reliability of the Bell velocity meter is still questionable. There is some indication that this unit is not required, according to Mr. O'Green.

The problems in use connected with this element should be resolved.

We had a considerable discussion regarding the Lear hydraulic package. Steps have been taken to improve the Agena B unit designated as the Mark II type by redesigning a considerable part of the unit, which is now designated as the Mark III type. Apparently three Discoverers have been lost due to hydraulic system failure. Mr. Johnson was not impressed by the redesign, in that the basic concept still involves an acceleration from zero to 7,000 rpm in 2 to 3 milliseconds, with attendant high loading on all parts of the hydraulic package. This unit will be late for qualification and is a strong potential element for causing a program delay and a vehicle failure.

Continual difficulty is experienced with solid state inverters. The most intensive inspection and quality control procedures, as well as a basic design review, are in order to attain reliable inverter operation.

The control gas valve was mentioned as a problem, which we know it to be, but time did not permit a discussion of this unit.

Discussion on the reasons for late structural tests on the production unit indicated that the first six vehicles had a longeron arrangement different from the last six. This involved duplicate static testing, at considerable cost, and resulted in a late static test for the actual production Agena D. A study of the drawings involved would indicate it to be in order to take immediate steps to make all vehicles alike structurally (and in every other way possible). It is felt that, by an all-out effort, the revised longerons can be installed in all vehicles and the static test article, to attain this end. It should result in a much earlier static test on the production vehicle and better accessibility and lighter weight on the first six articles. We emphasized to the Contractor the need for drastic control to insure that one type of vehicle be produced and that duplicate testing be avoided, from all points of view.

It is important that Col. Kucheman, the WSPO on the Agena D basic program, have sufficient authority to control the change requests from the using agency which adversely affect the standardization of the vehicle. In general, however, it can be stated that there seems to be an increasing acceptance, on the part of NASA and other groups, of the over-all concept of the program.

An effort was made to compare the costs of the Agena D vehicle to those of the Agena B at a comparable stage of development. But the information presented by the Contractor was extremely involved and unclear.

It is always hard to compare the costs of one airframe to another, because of the numerous extraneous factors which always come into the picture, but it is possible to do a better job than we were shown on 26 February. To do this, it is necessary to take the vehicles at the same stage on the learning curve, to separate out differences in equipment and engine costs and to consider changes in labor and material costs due to inflation, when that is a factor. It seems apparent, after inspecting progress in production on the Agena D, that the over-all cost per bird must be less than that for the Agena B. The Contractor was asked to prepare data reflecting the above considerations for your early review.

19 APR 62.
[illegible]
Review of Actions LAST.

RECOMMENDATIONS

1. The contract negotiating team of the Air Force and the Contractor should be directed to reach a settlement by 28 February 1962. Where technical agreement has been reached between the WSPO and the Contractor, these matters should be accepted by the negotiators without further lengthy discussions.

2. The fuel tank should not be redesigned, as currently proposed, to save 12 pounds of weight.

3. An intensive effort should be carried on to improve the operation and reliability of the horizon scanner.

BARNES S.F. X

4. The hydraulic system package is a most critical item and it is in order to carry on a parallel study for other means for obtaining reliable hydraulic power. It is probably necessary to make use of the currently planned units, but these will very likely be an everlasting source of trouble.

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WOU

OK

5. The electrical inverter and the gas control valve require the most diligent engineering studies and quality control to insure their reliability.

OK

6. There should be only one basic structure developed for the Agena D, requiring one set of structural tests, which should be accelerated greatly.

7. The cost studies and, more importantly, the cost control on the Agena D should be evaluated and compared with the Agena B. The problems of re-engineering, multiple testing of inadvertent changes in vehicles, etc., must be controlled more closely by Contractor and the WSPO.

EVAN. G.E. COPY
[illegible] Unit Cost

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Action

8. Funding of the Agena D on a time basis has been rather marginal in two cases. It should not be required that the Contractor use his own funds to carry forward the program.

CONCLUSION

The status of the Agena D program is good. The program appears to be on schedule and production of three vehicles well along. An additional unit is in checkout and appears to be coming along well. There is every indication that schedules and costs can be met. There appears to be an excellent relationship between the Contractor and the Air Force, with both going all-out to make this a successful program.

O. J. Ritland
Maj. Gen. O. J. Ritland

Clarence L Johnson
Clarence L. Johnson

[redacted]

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INFO ✓ ✓

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ERAL SCHRIEVER WITH A COPY TO SCGN. PLEASE INFORM HQ AFSC,
N AS TO WHEN THE RESULTS OF THIS REVIEW WILL BE FORWARDED.

/1934Z FEB RJEZFF

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UNCLAS SCGN-28-2-46 FOR SSG, GENERAL RITLAND; INFO FOR MR. C. L. JOHNSON.
THIS IS TO CONFIRM GENERAL SCHRIEVER'S REQUEST THAT GENERAL RITLAND AND MR. JOHNSON REVIEW THE STATUS AND PROGRESS OF THE AGENA D PROGRAM. PROGRESS WITH REGARD TO THE MANAGEMENT AND OPERATIONAL PLAN SHOULD BE INCLUDED. A SHORT SUMMARY OF THIS REVIEW SHOULD BE PREPARED IN WRITTEN FORM AND FORWARDED TO GENERAL SCHRIEVER WITH A COPY TO SCGN. PLEASE INFORM HQ AFSC, SCGN AS TO WHEN THE RESULTS OF THIS REVIEW WILL BE FORWARDED.
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153

2 Mar 62

SSD

Agena D Weight

SSZ
SSZX

1. Reference SSZ letter subject, Agena D Weight, dated 12 Feb 62. Apparently the 500 to 800 pound overweight condition of the Agena D referenced in your paragraph 2 is a result of misinformation having been passed to Colonel Riepe by his LMSC contacts. Colonel Riepe advises me that at the present time, the total space craft/Agena D weight is 50 pounds overweight to perform his mission. This is not caused by the Agena having exceeded its target weight.

2. The committed weight for the basic Agena D of 1618 pounds has been achieved and bettered. This Program will continue to hold to the committed weight for purposes of evaluation for the Using Program requirements; however, the current weight status for AD-1 is approximately 30 pounds less than committed. These weight savings are the results of the following:

a. Progressing from estimated, calculated and "spec" weights to "actual" weights of black boxes, wire harness, and structure. The current weight status reflects 50-60% actual weights.

b. Redesign of the thrust cone and the booster adapter.

c. Removals of diagonal braces and portions of the aft section bulkhead and removal of sheet and conical baffles from the oxidizer tank.

Additional weight saving is planned which, because of scheduling problems, will not be incorporated until AD-6. This saving will result in about an additional 15 pound saving, and will be accomplished by:

a. Reducing the skin thickness of the Guidance Module (longerons will be added) and simplifying the component attachment.

ColKucheman/dc/2Mar62

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~CONFIDENTIAL~~

SJXA-861

[illegible] reducing the size, weight and complexity of the TM System.

[illegible] shortening the Booster Adapter Extension which will be used on [illegible] boosted missions.

[illegible] Agena D weight allocated for the 481A Program is at least 100 pounds below that which in the early days of the project was assigned to the Agena D. The current weight discrepancies are due to weight increases in the payload area. I am attaching for your information a copy of a chart which depicts the impact of our weight reduction program which has been in effect for the past six weeks. The target weight shown on these two graphs is the target weight dictated by the Agena D Discoverer mission, our design objective. It should be borne in mind that the target weight is the weight (1326 pounds dry weight on orbit) which we are committed to furnish. Although our current weight status would indicate that we are comfortably below this target weight by some 50 to 60 pounds, it must be recognized that any structural adjustments which would accrue from the tests currently being run on structures or the conversion of estimated weights to actual weights will probably be additive.

[illegible] Since you can't put ten pounds of potatoes in a five pound bag, I hope we are designing to the right criteria. Thus far we have not received a definitive statement from Colonel Riepe.

HENRY L. KUCHEMAN, JR.
Colonel, USAF
Deputy for Agena

1 Atch
Agena D Basic Weight
Status Graph (2 pgs)(U)

~~CONFIDENTIAL~~ SECRET 15

SSXD

2 MAR 1962

Agena D Delivery Schedule

SSZ

1. Reference SSZ letter subject, Agena D Firm Requirements, dated 16 February 1962.

2. The Agena D office concurs with the allocation of the first thirteen Agena D's as revised by the referenced letter.

3. The delivery schedule for the first twelve Agena D's is a contractual requirement of the basic Agena contract. As stated in the basic correspondence, the need dates are supported by the contract delivery schedule, except for the first Agena D which is four days late.

4. The Agena D office has a follow-on letter contract to support the requirements listed on Date Table #19, Supplement A, dated 2 Feb 62. This letter contract provides for long lead procurement to build up production to four per month in December 1962 as reflected in the referenced date table. There is presently no contractual delivery schedule associated with the follow-on contract. This planned production rate will support Date Table #19 requirements but will deliver Agena D's up to four months in advance of the need date in the fourth quarter of CY-63.

5. Upon receipt of the additional chart verifying both firm and planning Agena D requirements, this office will take necessary action for a contractual delivery schedule to meet SSZ requirements.

SIGNED

HENRY D. KUCHEMAN, JR.
Colonel, USAF
Deputy for Agena

1 Atch
Chart, Agena D Rqmts,
(S) 2 pgs (multilith
master)

When inclosures are withdrawn the classification of this correspondence will be down graded to [illegible] in accordance with AFR 205-1.

~~CONFIDENTIAL~~

SSXD/MajHegerle/dc/28Feb62

DOWNGRADED AT 12 YEAR
INTERVALS; NOT AUTOMATICALLY
DECLASSIFIED. DOD DIR 5200.10

SECRET

SSZKR-159

MGT-2

5 MAR 1962

Policy Memorandum - Agena D Optional Equipment Procurement Procedures

SSZ, SSV, SA, SP

1. Reference SSZ Policy Memorandum #22, Agena D Optional Equipment Procurement Policy, dated 25 January 1962.

2. To implement this policy, the following detailed procedures will be utilized:

a. The attachment to referenced memorandum is outdated. Attachment 1 hereto is a current listing of optional equipment unit cost and procurement leadtime. This list will be revised by SSX if changes occur.

b. Agena D optional equipment will be procured in lots as dictated by fiscal year requirements. At the beginning of each fiscal year, an order will be placed for all the optional equipment which, because of the reorder leadtime, must be procured during the fiscal year. The lot release date will be dictated by the leadtime of the first user. In accordance with paragraph 1a of referenced memorandum, the total fiscal year requirements will be consolidated by SSZKB. Program funds to support the total lot procurement must be provided to SSX prior to the lot release date. SSX will provide each program office with a time table of funds required to support the approved quantitative requirements.

c. SSZKB will initiate Purchase Requests to fund requirements utilizing existing PR procedures and obtain coordination from each program office concerned. Program funds should be cited and, in the remarks section, a statement included indicating that "this equipment will be procured under the AF 04(695)-68 Agena D contract for the FY-63 and prior year procurement".

d. SSX will provide for contractual coverage and monitor contractor to insure delivery is timely and in consonance with established requirements.

[illegible] of funds required by program will be provided upon [illegible] approved quantitative requirements from SSZKR.

SIGNED

[illegible] FLETCHER, JR.
[illegible] USAF
[illegible] Director

1 Atch
Optional Equip Listing

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~~55 ADR~~

MAR 1962 17 47

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CALS SCGN-7-3-12 FOR SSG, GENERAL RITLAND; INFO FOR C. L. JOHNSON.
ECT: AGENA "D" PROGRAM. REFERENCE REPORT FEOM GENERAL LAND AND MR. C. L. JOHNSON DATED 27 FEBRUARY 1962 AND CON BETWEEN GENERAL RITLAND AND COLONEL NUDENBERG N) AND 5 MARCH. REQUEST RECOMMENDATIONS CONTAINED IN ERENCED REPORT BE IMPLEMENTED WITHOUT DELAY. FURTHER UEST GENERAL RITLAND AND MR. JOHNSON CONDUCT AN ITIONAL REVIEW OF THE AGENA "D" PROGRARM $ABOUT 1 APRIL PROVIDE A SHORT WRITTEN REPORT ON PROGRAM STATUS TO ERAL SCHRIEVER.
BT
07/1637Z MAR RJE

OPR
Col Kuchman
called
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to Implement

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LOCKHEED MISSILES & SPACE COMPANY
Sunnyvale, California

In Reply Refer to:
LMSC/A075323
Dept. 60-31

8 March 1962

Subject: Comparison of Costs - Agena B vs Agena D

To:
AFSSD(SSZ)
Attn: Col. E. L. Evans
Air Force Unit Post Office
Los Angeles 45, California

Thru:
AF Plant Representative
Sunnyvale, California

Reference: (A) AFPR ([illegible]) Memo to [illegible]/Elmo E. Haden, w/copies to L. A. Carter, etal, dtd 2-16-62, subject: Agena B vs. Agena D Cost Data (No LMSC Reference)

Enclosures:
(a) Labor Cost Comparison Agena B vs Agena D - Chart
(b) Total Vehicle Unit Cost Comparison - Chart
(c) Vehicle Unit Cost Comparison "B" vs "D" for Discoverer - Chart
(d) Agena B vs Agena D Cost Comparison by Program - Table
(e) Agena B vs Agena D Cost Comparison by Element - Table
(f) Discoverer Subcontract and Material Cost Comparison - Table
(g) Summary of Cost Savings - Table

1. The Contractor has completed the comparison of Agena B vs Agena D costs for the Discoverer, Program 201 and MIDAS, in response to an oral request from AFSSD and per Reference (A). This study is concerned solely with vehicle costs and, by mutual agreement, one time development costs are excluded from both Agena D and the using programs. With actual experience on 41 Agena B's, cost projections are considered very reliable. However, since both the new Agena D and the programs using Agena D are in the early planning, design, and prototype phases, cost projections are much more difficult to predict.

2. Each of the programs phases in at different periods in the

life of that program, as well as at different points on the Agena D development, thereby producing a combination of variables requiring careful analysis. To insure a valid comparison, LMSC has conducted a thorough review of design, material and subcontract hardware and testing for both "B" and "D" on the basis of the following premises:

(A) Vehicle Costs

Vehicle costs of the Agena B Discoverer, Midas and 201 Programs are compared with equivalent cost of the Agena D Discoverer, Midas and 201 Programs. These costs include the functions listed below:

Agena B	Agena D
Program Vehicle	D Vehicle
	D Test
	D DD250
	Program Optionals
	Program Peculiars
Program Test	Program Test
Program DD 250	Program DD 250
Support	Support
Total Vehicle Cost	Total Vehicle Cost

(B) Schedule

Date Table 19 determines quantities and manufacturing sequence.

(C) Basic Agena D - Labor

Learning Curve 1 thru 5 - 90%
6 thru 73 - 85%
Note: Labor curves are shown on Enclosure (a)

(D) Optionals - Labor

Learning Curve All - 93%

Factors: Smaller quantity than basic "D"s;
some vehicles unassigned - optionals unknown.

(E) Peculiars - Labor

Learning Curve 1 thru 73 - 93%

Factors: Fewer quantities - greater variables
between peculiars and greater and different
spacing between peculiars.

Subject: Comparison of Costs
Agena B vs Agena D

TO: AFSSD - SSZ
Attn: Col. H. L. Evans

(F) Systems Test - Labor

Learning Curve 1 thru 73 - 89% composite

Factors: 89% on vehicle oriented effort (variable)
90% to 100% on support effort (fixed)

(G) Material "B"

Learning Curve 1 thru 13 - 97%
14 thru 73 - 97%

Factors: Step function after Vehicle 13 reduced costs by about 10% of average material cost as development of new sources and use of existing CPFF equipment is completed. One time procurement of 60 units provides this savings.

Note: Agena D includes new and improved equipment, such as Sensors in lieu of Scanners, advanced design of IRP and adds a velocity meter, etc. For this study it is assumed that similar improvements would be included in any added Agena B vehicles and identical costs are included for both "B" and "D". Enclosure (f) shows the comparison of current "B" to the new "D" costs for reference purposes only.

(H) Material - Peculiars

Learning Curve 1 - 73 - 97%

Factors: Will continue short procurement, step function savings (Item G) are not available.

(I) Equivalent Agena B

Learning Curve - Each Program - 90%

Factors: Continues present experience and re-order method on a limited number basis. No standard "B" exists. Frequent re-orders on variable spans.

(J) Support Costs "B" and Programs - Labor

Evaluation with each Program Office based on present effort and current proposals. Effort covers sustaining engineering type activity (not original design) necessary to support the flight configuration of each vehicle and to provide related flight data reduction.

(K) Support Costs Agena "D" - Labor

No support costs are included for the first 13 "D"s since this effort is covered under the development effort. $50,000 is included per vehicle, starting with #14.

(L) Costs Excluded

All costs for AGE, Logistics, Spares, one time development tooling and engineering are excluded from this study.

3. To compare the cost of using either an Agena B or D it is first necessary to analyze the phase-in period established by Date Table 19. Enclosures (a) and (b) make this analysis, showing the unusual phasing problems and learning curve relationships summarized below:

Quantity	Using Programs	Learning Curve Position Span	
		Programs	Agena D
13	Discoverer	41 - 53	1 - 14
13	201's	10 - 22	16 - 73
11	Midas	1 - 11	18 - 99
37	Total		
24	Other Programs		
12	Unassigned		
73	TOTAL		

Further comparison is done on a Program Basis, as follows:

4. "B" Discoverer costs (triangle) compare with the "D" Discoverer curve showing a break-even point at the 14th unit. The relative position of the learning curves indicates that "D" Discoverer absorbs most of the "D" early period high costs.

A more detailed analysis of this period is shown on Enclosure (c) comparing the individual vehicle costs for the 13 Discovers, plus an assumed Follow-on of 13 more, revealing a 10% cost savings at the 26th unit.

Subject: Comparison of Costs
Agena B vs Agena D

To: AFSSD - SSZ
Attn: Col. E. L. Evans

4. (cont'd)

B Discoverer

Unit No.	Unit Cost
T-41	[redacted]
T-53	[redacted]
T-54	[redacted]
T-66	[redacted]

D Discoverer

Unit No.	Unit Cost
T-1	[redacted]
T-13	[redacted]
T-14	[redacted]
T-26	[redacted]

The step reduction at T-14 is the result of two cost advantages. First, Factory Automatic Checkout Equipment (FACE) is expected to reduce "D" testing by $50,000 per vehicle average. In addition, the single procurement of 60 units of material is estimated to save an additional $50,000 per vehicle (Premise G).

An earlier break-even point at the 12th unit is indicated if Discoverer optionals and peculiars are installed and tested by Agena D.

More Discoverer total cost comparison information is shown on Enclosures (d) thru (g).

5. Program 201. This phasing period extends over 58 Agena D's and receives learning curve benefits from T-16 to T-73; none of the early high cost period Agena D vehicles are used by Program 201. For these reasons there is an immediate pay-off by using Agena D, beginning with the first vehicle and totalling $2.56 million for the 13 units.

6. MIDAS. Midas phasing also benefits from the use of later Agena D's spread over 42 vehicles, from T-18 to T-59. Here, again, the pay-off is immediate from the first unit and totals $8.86 million for 11 units.

[redacted]

[redacted]

[redacted]

Subject: Comparison of Costs
Agena B vs Agena D

To: AFBMD - SSZ
Attn: Col. E. L. Evans

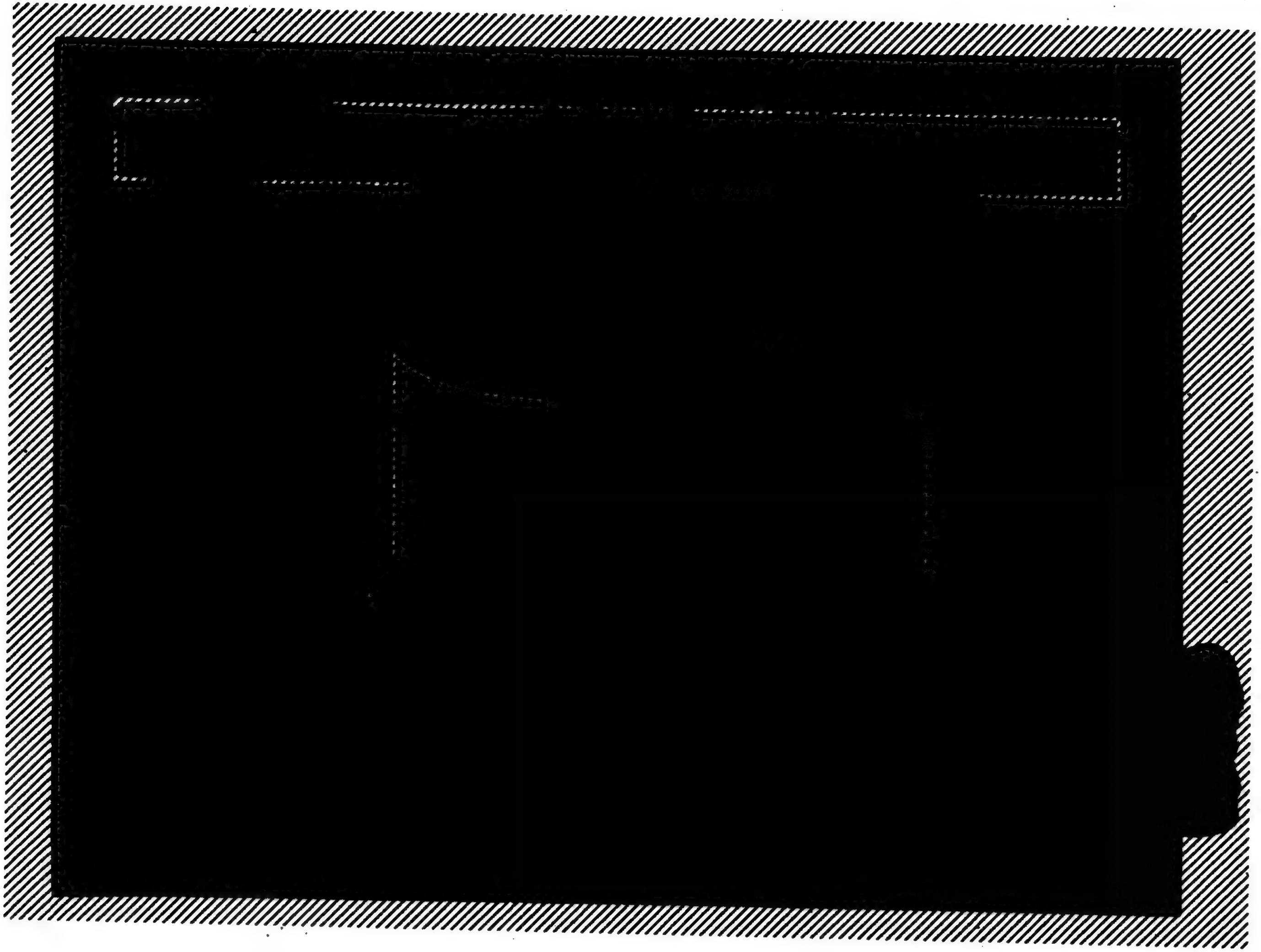
8. Contractor's preliminary cost estimates indicate savings result from introduction of Agena D beginning with the 14th Discoverer vehicle. Immediate savings are achieved on 201 Follow-on and MIDAS Programs. It is obvious that these estimates are not based on actual experience of vehicle testing activity. Such costs will be dependent on final resolution of test plans.

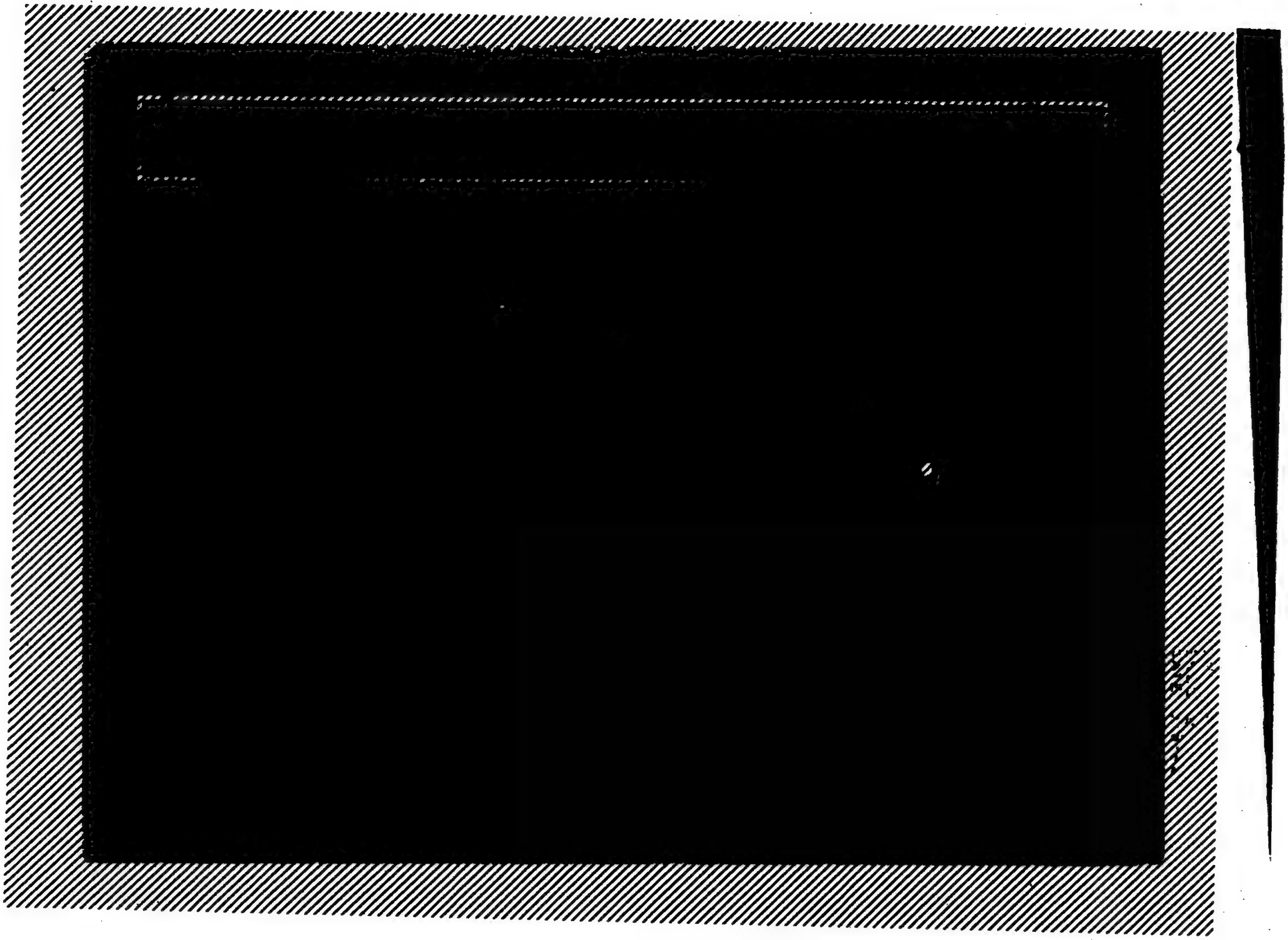
SPACE SYSTEMS DIVISION

W. M. Hawkins
Vice President and General Manager

WMH:JCM:b

cc: AF Plant Representative
Sunnyvale, Calif.





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DISTRIBUTION LIST

LMSC/A075923
Dept. 50-01
8 March 1962

Subject: COMPARISON OF COSTS AGENA B VS AGENA D

Col. J. H. Voyles (Original + 5)

L. E. Root
D. J. Gribbon
W. M. Hawkins
F. W. O'Green
L. A. Carter
J. W. Plummer
DCS (8) 60-10 (2)

R. A. Anderson
J. O. Bradley
E. P. Andrews/D. D. Pollock
E. E. Crowther
J. J. Knopow

[illegible], Capt [illegible]/ OS 9-4661-1600

Study of Thor Agena B Configurations 22 March 1962

SSVR (Maj J. Albert)

1. Ref. ltr MSFC (M-L & M-A), dated 20 Feb 62, Subj: Study of Thor Agena-B Configurations to meet the Operational Meteorological Satellite Requirements.

2. Although the subject letter contains only a request for an estimate of cost, an intent for LMSD to later subcontract to DAC is implied.

3. A study of the type described could result in duplication of effort unless close coordination with SSVX was maintained. For example, the Statement of Work for the study includes several areas of work either completed or in process:

a. Launch complex modifications for Pad 1, except gantry modifications, have been completely designed to the point of release for both the DSV-2C (Thor-Agena B with solid boost) and Thorad A (Thor Agena B with solid boost and additional propellants in the first stage).

b. A detailed engineering study of the Thorad Jr (DSV-2C), or Thor + 3 is presently in progress.

c. In addition, Douglas has submitted a proposal for a Thorad IRBM, which is essentially the same configuration as the booster for the third vehicle described in the work statement.

4. Since the requested cost estimate is of interest to other SSD programs, request that SSVX receive a copy of the DAC ROM estimate submitted to LMSD.

5. The Directorate for SLV II has the capability to most efficiently obtain the subject study from DAC for LMSD and NASA. Since this study would be of direct interest to SSD, considerable knowledge and benefit would result from the study being managed, including contracting and technical direction, by SSVX. It is my desire and position that SSVX should have the management responsibility for the DAC part of the study when funding is provided for its implementation.

ROBERT L. BEERS
LtColonel, USAF
Director, Standard
Launch Vehicle II

159

SSVXE/ Capt McCeeley/OG 9-4661-1663

DM-21/Agena D Pad and AGE Modification

13 March 1962

SSVXK

1. Request contractual action be taken with DAC to modify Pads 1, 4 and 5 at VAFB and associated AGE to launch DM-21/Agena D vehicles.

2. The work required will be as follows:

a. Provide additional cables on Pads 4 and 5 from the Pads to the blockhouse.

b. Change the plugs on the General Electric cables on Pad 1 to be interchangeable with the cables on Pads 4 and 5.

c. Wire the lock-out relays from Pads 1, 4, and 5 to their respective blockhouses and install switches and indicator lites on the consoles.

d. Modify interface simulators at Santa Monica and Vandenberg Air Force Base.

e. Modify checkout gear at Santa Monica and Vandenberg Air Force Base.

3. The work outlined in Items a and b above is also required for Pad 2; however, DAC will accomplish this work under the -77 contract as it is now written.

4. The work on Pad 1 and associated AGE should be completed by June 1962. The work on Pads 4 and 5 and associated AGE should be completed in time to meet the Discoverer DM-21/Agena D launch schedule.

JOHN H. JOHNSON
Capt, USAF
Chief, Engineering Support Branch

CC: SSVXT (Capt Young)

X: Pro 1-1

~~CONFIDENTIAL~~

160

Contract for 36 Agena vehicles

MAR 22 1962

SSD

Contract AF 04(695)-63, Request for Authority to Use
Form C Price Re-determination

DOWNGRADED AT 3 YEAR INTERVALS.
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

SSK

1. Reference is made to AFPI 3-403.3(i)(c)(4) and discussion with Mr. Hines, SSKP, 22 March 1962.

2. It is proposed to use a Form C price re-determination provision in the subject contract as defined in ASPR 3-403(b)(3), and ASPR 7-109.4, "referred to as Type C". Set forth below are the significant details of this procurement.

a. The subject contract is a fixed price letter contract issued to LMSC 18 Dec 61.

b. Requirements of ASPR and AFPI with regard to a Type C re-determinable contract have been considered.

(1) It has been determined through preliminary negotiation that this type of re-determinable contract fulfills more completely than any other type of contract the requirements established by the conditions surrounding the procurement.

(2) Sufficient pricing information will be made available from data derived from Contract AF 04(695)-21 to negotiate a prospective target price.

(3) A firm fixed price can be established at a point substantially in advance of contract completion.

(4) Assurance has been received that the contractor's accounting system is adequate for contract price re-determination purposes.

c. The subject contract is for 39 Agena D vehicles to be produced in accordance with specifications and drawings prepared under R&D Contract AF 04(695)-21. This procurement data will be available prior to preparation of a cost proposal. The contract will also provide for spare parts and logistic support.

~~CONFIDENTIAL~~

55H-5

d. Although preliminary discussions with the contractor have indicated the necessity for a re-determinable type of contract, no proposal has been submitted to date and target and ceiling prices have not been established.

e. The subject letter contract was issued on a sole source basis and no competitive proposals are obtainable.

f. The delivery schedule for supplies to be furnished under the contract are as follows:

1962				1963						
Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul
2	4	3	4	4	4	4	4	4	4	2

g. It is impracticable to issue a straight fixed price contract since the only cost history available is that derived from Contract AF 04(695)-21 which includes a large percentage of non-recurring start-up costs in the form of design, tooling, and test equipment, plus many changes involved in the development processes. It would not be feasible to make an accurate adjustment of these non-recurring costs to insure protection of the interests of the government in negotiating a straight fixed price contract. Consideration was given to other types of contract such as CPIF and fixed price with successive targets, etc., and none of these type appear as suitable as the Type C re-determination.

3. It is further proposed to discuss the possibility of an incentive provision with the contractor on a FPIF basis, subsequent to the price re-determination. Since the situation with regard to incentives in regard to this contract is not sufficiently clear at this time, no authority for incentives is now requested. If the circumstances warrant,additional authority may be requested for use of an incentive type contract.

4. In view of the data presented above, authority is requested to commence procurement action upon the basis of a fixed price contract with Form C re-determination.

SIGNED

EUGENE S. SILBERMAN
Contracting Officer
Agent D

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SSD MAR 22 1962

Contract AF 04(695)-21 - Incentive Fee Negotiations

Lockheed Missiles & Space Company
Attn: Mr. Willis M. Hawkins
Post Office Box 504
Sunnyvale, California

1. I have received your letter of 19 March concerning the negotiations toward definitization of our contract AF 04(695)-21 for the Agena D program, and am pleased to have this opportunity to discuss it with you.

2. It may be helpful for me to review the Air Force position concerning the fee for the subject contract. No sweeping statement was intended or should be made "that CPIF contracts merit higher or lower fee than CPFF contracts". Every contract must be considered in relation to the program it pertains to, and the individual circumstances which influence fee.

[redacted]

[redacted]

F_t - fee total
T - target
F - fee
c - cost
s - schedule
p - performance

The Contracting Officer indicated to your representatives that there was flexibility in the proposed formulas which could be negotiated.

4. It is not my intention here to theorize on negotiation. Nevertheless, it is necessary to point out that the negotiation of a contract requires mutuality, and that both parties must sit down at the table and enter into discussions whose sole objective is to reach agreement. Obviously, no agreement can be reached if one party keeps saying "No" to every offer presented. It is suggested that your negotiators offer a fee formula which they consider reasonable and that discussions be held on the basis of the contractor's position versus the Air Force position. If this approach is followed in proper spirit by both parties, there is no question in my mind that a speedy agreement can be reached.

5. I understand that the contractor desires an incentive type contract. This desire is equally reflected by the Air Force. You will, therefore, understand our rising concern in negotiation delays with relation to the degree of completion of the program. It is clear that there is a point beyond which incentive fees could not influence the outcome of the program, and when that point is reached it would be purposeless to apply such incentives.

6. The Air Force reiterates your statement that we are willing and anxious to resume negotiations at the earliest possible moment. I suggest that the Air Force negotiation team resume negotiations on an incentive fee as soon as a suitable counter proposal can be submitted by LMSC.

SIGNED

EUGENE S. SILBERMAN
Contracting Officer
Agena D

Copy to:
AFPRO LMSC
Sunnyvale

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OFFICE OF THE AIR FORCE PLANT REPRESENTATIVE
WESTERN CONTRACT MANAGEMENT REGION
UNITED STATES AIR FORCE
LOCKHEED MISSILES AND SPACE COMPANY
SUNNYVALE, CALIFORNIA

[illegible] 23 1962

REPLY TO
ATTN OF: [illegible]

SUBJECT: Progress Made in Improvements to LMSC Accounting System

TO: Major General O. J. Ritland
Commander, Space Systems Division
AF Unit Post Office
Los Angeles 45, California

Dear General Ritland

I am writing to inform you of recent developments in attaining improvements to the Lockheed Accounting System. This has been the subject of prior communications to you and is a subject with which I know you are most concerned.

After considerable pressure was exerted on Lockheed, including withdrawal of approval of the System, they finally agreed to make the changes which we have all felt were necessary to improve the System. On 7 March 1962 a formal presentation was made to me and other representatives of the Departments of Defense on changes proposed by Lockheed to improve the System. This verbal presentation was supported by a comprehensive written plan. In addition, LMSC presented on 8 March 1962, a time phased milestone plan to accomplish the proposed changes. My staff has prepared charts of these time phased actions and are closely following each step to insure that the Contractor adheres to the schedule.

My Chief of Contracts, acting for all Departments of Defense, has now extended approval of the System for incentive type contracts and has also informed Lockheed that although no formal approval is needed on the System for straight fixed price contracts, we would affirmatively reply to facility capability requests presented to us by the buying offices in the Air Force. The only remaining approval on the System is for redetermination type contracts and this will be done as soon as we receive a recommendatory letter from the Air Force Auditor which is expected in the next few days.

I consider this a most significant forward step. The improvements will provide refinement in the application of costs to individual Government contracts and remove the inequities in the system which heretofore was not sufficiently detailed to segregate costs to the detail necessary on the large volume of contracts now under administration at this location. LMSC at first was highly resistant to any change; however, with patience and persistence we were able to convince them of the desirability of the changes and I now feel that Lockheed is whole-heartedly with us in making the improvements.

During the course of our negotiations with LMSC to secure necessary changes in the System, considerable attention in many quarters became focused on the problem. The withdrawal of approval of the System reached the attention of the Air Force and Navy at headquarters levels and generated considerable criticism of LMSC from the top and intermediate levels in the two services. Part of this criticism and lack of faith at headquarters level was justified, part was not. In the past several months Lockheed has told us that they feel they have been unjustly criticised and that their prospects for future business have been impaired because of misunderstandings by Department of Defense management. In order to be fair to Lockheed we feel that all effort should be made to dispel the mental image that Lockheed cannot manage their affairs to the point that they continually have an unsatisfactory Accounting System. Lockheed has now shown good faith in presenting a positive plan of correction and we feel it appropriate to give credit where credit is due and inform all parties involved that Lockheed now has a satisfactory system. Your personal effort in this area will be appreciated.

Sincerely

JAMES H. VOYLES, JR.
Colonel, USAF
AF Plant Representative

[illegible] 163

~~SECRET~~

SPACE SYSTEMS DIVISION

UNITED STATES AIR FORCE

ABRIDGED PACKAGE

648B - AGENA D

2 APRIL 1962

DOWNGRADED AT 12 YEAR
INTERVALS; NOT AUTOMATICALLY
DECLASSIFIED. DOD DIR 5200.10

~~SECRET~~

62-40502

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Foreword

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Master Schedules 3-1
Financial Section 4-1
Individual Justification 5-1

FOREWORD

1. This document is submitted in conformance with AFSC direction for FY-63 and FY-64 financial requirements submission in the consolidated program guidance.

2. Hq USAF has directed that the R&D effort on the basic Agena D contract (AF 04(695)-21) will be amortized among the program users. No component improvement effort will be included in the fixed price for follow-on vehicles. The component improvement program will be submitted and justified separately and will appear as an Agena D line item in the budget.

3. This plan is submitted to provide for improved reliability, producibility, mission adaptability and serviceability of the production Agena D. The accomplishment of this plan will reduce checkout requirements and production unit costs.

4. This plan was reviewed by the SSD Program Budget Review Committee (PBRC) on 28 March 1962 and the Hq USAF/AFSC Joint Review Team (JRT) on 2 April 1962 and received their approval.

Henry B. Kucheman

HENRY B. KUCHEMAN, JR.
Colonel, USAF
Deputy for Agena

PROGRAM SUMMARY

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D. Funding Guidance

1. Reimbursable funds will be used to fund the Agena D program with program funds transferred to the reimbursable account upon Agena D DD-250 delivery to the using programs.

2. Hq USAF has directed that the R&D effort on the basic (AF 04(695)-21) contract will be amortized among the program users. No component improvement effort will be included in the fixed price for the follow-on vehicles.

3. The component improvement program will be submitted and justified separately and will appear as an Agena D line item in the Budget.

II. Agena D Component Improvement Program

A. Objectives

1. The primary objectives of this program will be to improve the reliability, mission adaptability, serviceability, and producibility of the production Agena D.

2. With the accomplishment of these objectives, the goal will be to reduce checkout requirements and production unit costs.

[redacted]

COMPONENT IMPROVEMENT
PROGRAM SUMMARY

I. Background

A. Authorization

1. The increased activity in space programs generated interest in feasibility of designing a standardized AGENA vehicle to perform the necessary ascent functions common to all space programs. On 30 June 1961 the AGENA standardization study was authorized. This study proved technical feasibility, and on 25 August 1961 LMSD was authorized to develop and manufacture twelve (12) "Standard AGENA" vehicles with a first launch programmed for January 1963.

2. On 17 October 1961 the Honorable Dr. Joseph V. Charyk, Under Secretary of the Air Force, appointed a special committee chaired by Mr. Clarence L. Johnson to investigate ways and means of providing a more reliable AGENA on an accelerated schedule. This committee recommended acceleration, and on 7 November 1961 Dr. Charyk and General B. A. Schriever authorized go-ahead on the present accelerated schedules.

B. Program Objectives

1. The prime objectives of the accelerated AGENA D program are two-fold:

   a. To produce a more reliable standardized basic vehicle capable of performing essential ascent and/or orbital functions derived from common mission requirements or all satellite system programs.

   b. To provide a fixed-price procurement source for AGENA D vehicles.

2. To accomplish these prime objectives the Johnson committee basic ground rules have been implemented and govern the development of the AGENA D. In general, these ground rules apply a streamlined AF/Contractor management concept and include a DX priority, reduction in formal procedures, inclosed area, and extraordinary program management channels.

C. Contracts

1. The basic (AF 04(695)-21) contract provides for delivery of 12 flight vehicles, plus one DTV with the first AGENA D launch scheduled for June 1962. This contract also provides for the necessary tooling to support a five-per-month production rate.

2. The follow-on (AF 04(695)-66) contract will provide production line units at a rate commensurate with consolidated space program requirements on a fixed-price basis.

COMPONENT DEVELOPMENT
PROGRAM SUMMARY

I. Background

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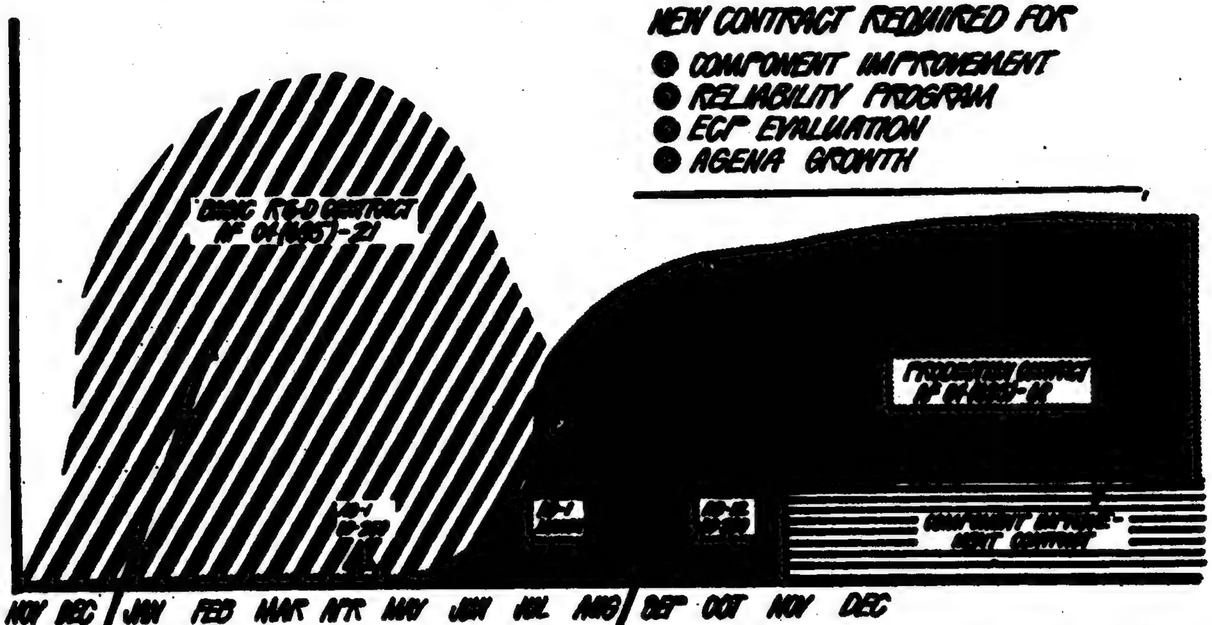
2. The follow-on (AF 04(695)-66) contract will provide production line units at a rate commensurate with consolidated space program requirements on a fixed-price basis.

UNCLASSIFIED

PROGRAM OBJECTIVES

UNCLASSIFIED

AGENA "D" DEVELOPMENT/PROCUREMENT PHASING PLAN



NEW CONTRACT REQUIRED FOR
- COMPONENT IMPROVEMENT
- RELIABILITY PROGRAM
- ECP EVALUATION
- AGENA GROWTH

BASIC CONTRACT PROVIDES
- PTA, TTV, STV, MOCKUPS, DTV
- 12 FLIGHT VEHICLES
- PRODUCTION PACKAGE
  - DRAWINGS
  - MODEL SPECS
  - ACCEPTANCE PROCEDURES

PRODUCTION CONTRACT PROVIDES
- PRODUCTION RATE AT 5 VEHICLES/MONTH
- CONFIGURATION CONTROL
- FIXED PRICE CONTRACT

COMPONENT IMPROVEMENT PROGRAM

OBJECTIVES –

1. IMPROVE RELIABILITY, PRODUCIBILITY & SERVICEABILITY
2. IMPROVE MISSION ADAPTABILITY
3. REDUCE CHECKOUT REQUIREMENTS
4. REDUCE COSTS
5. PERMIT SUITABLE GROWTH

UNCLASSIFIED

MASTER SCHEDULES

(AGENA D)

UNCLASSIFIED

CONFIDENTIAL

AGENA D BACKGROUND

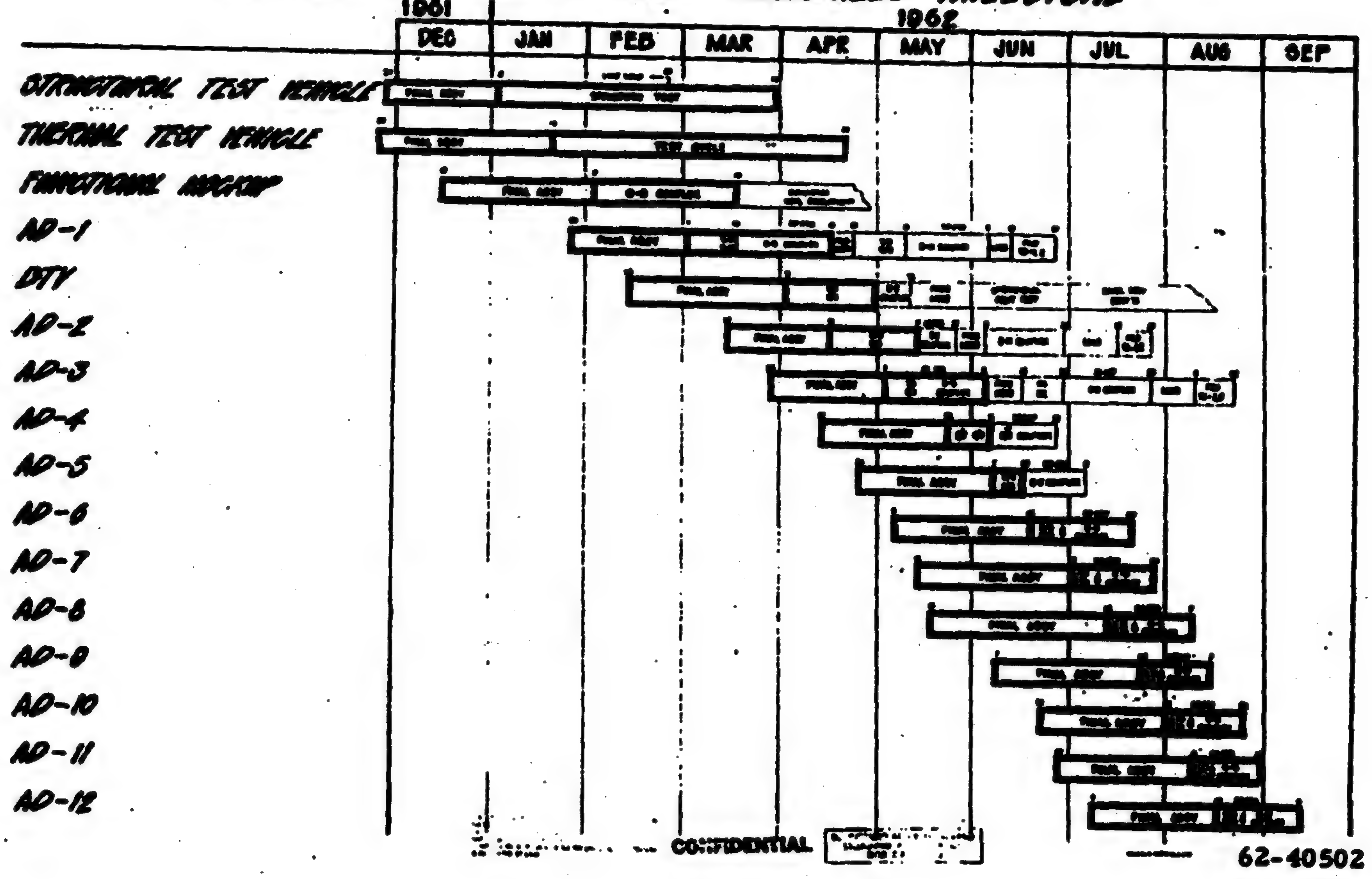
- STANDARDIZATION STUDY ———— 30 JUNE 1961
- INITIAL GO-AHEAD ———— 25 AUG 1961
- ACCELERATED GO-AHEAD ———— 7 NOV 1961
- FIRST LAUNCH ———— JUNE 1962
- PROGRAM OBJECTIVES
  1. STANDARDIZATION
  2. RELIABILITY, PRODUCTIBILITY & REDUCED COST
  3. FIXED PRICE PROCUREMENT
- SCHEDULE
  1. BASIC CONTRACT – 12 VEHICLES
  2. FOLLOW-ON CONTRACT – COMMENSURATE WITH REQUIREMENTS (CAPACITY 5/MO.)

CONFIDENTIAL

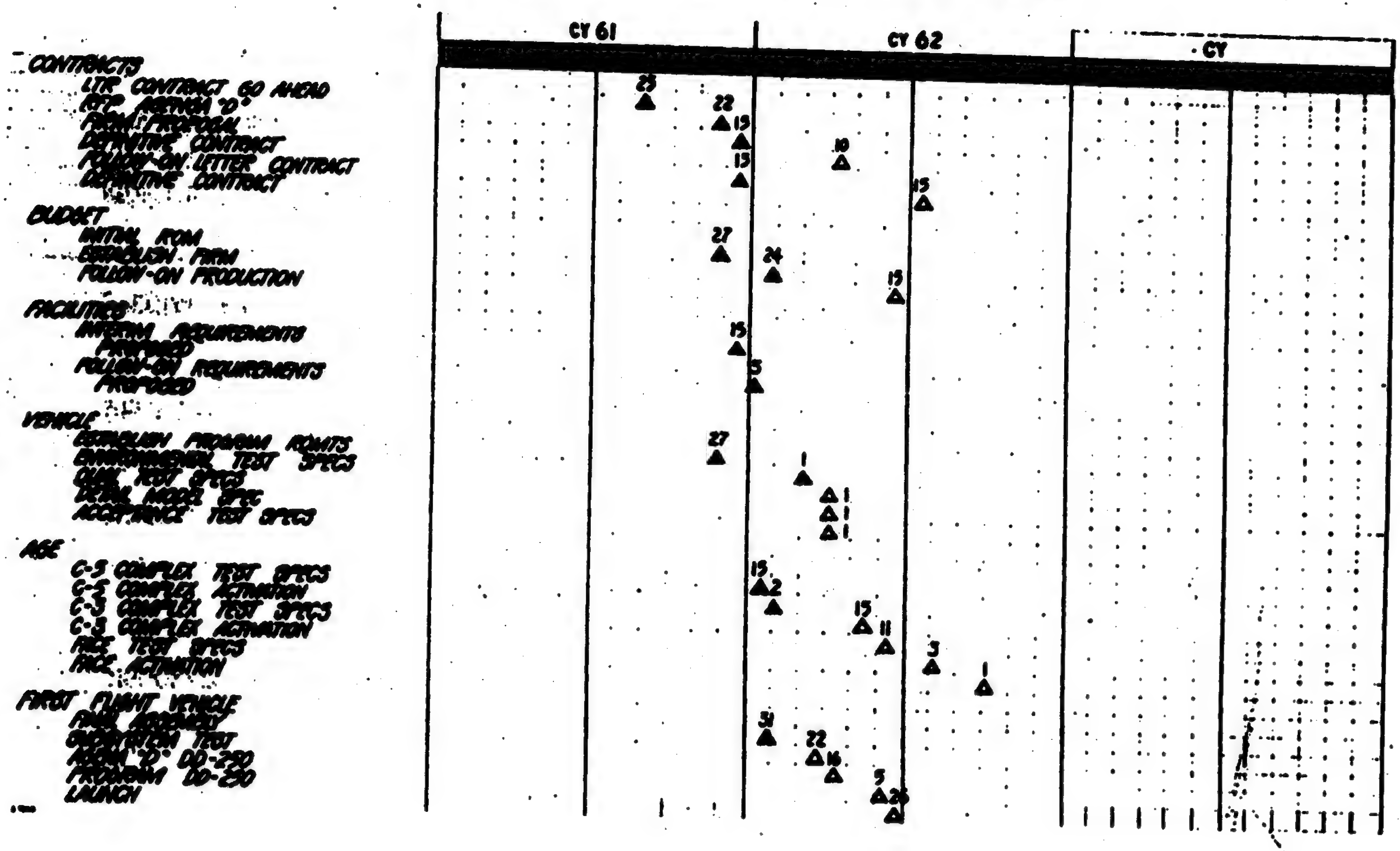
CONFIDENTIAL

PROGRAM 648B

MASTER PROGRAMS AND SCHEDULES MILESTONE



PROGRAM 648B MAJOR MILESTONES



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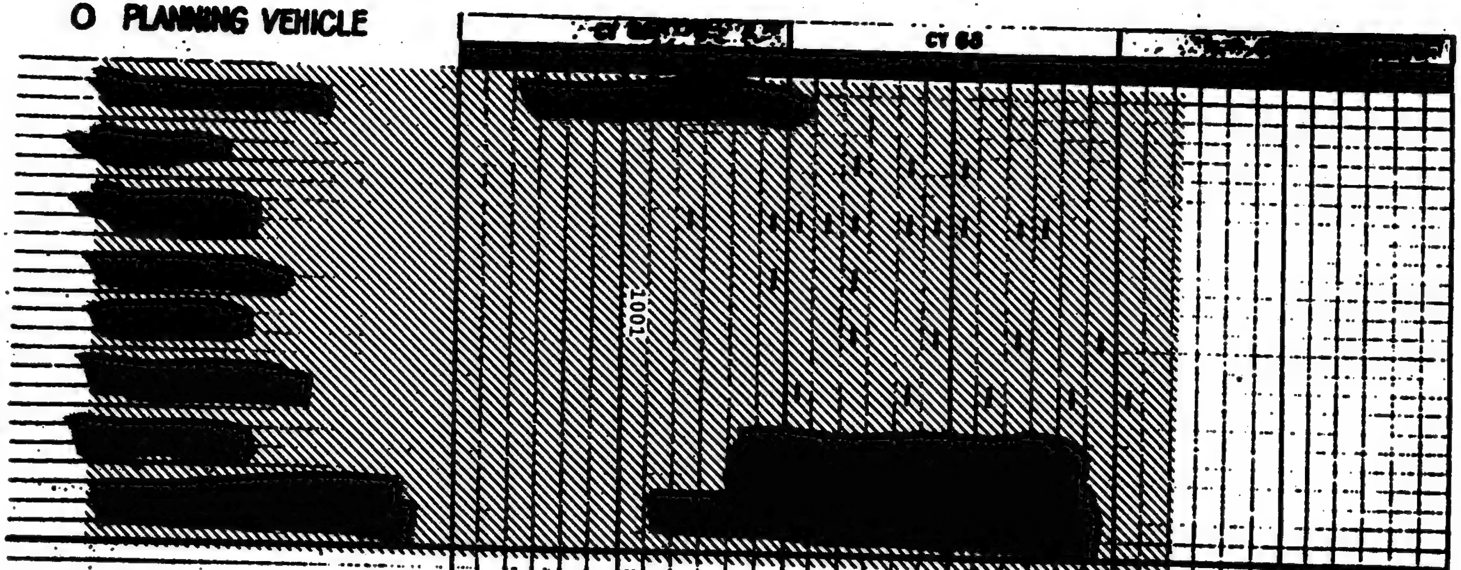
AGENA D-REQMTS SUMMARY

○ PLANNING VEHICLE



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[redacted]

REQMT'S TOTAL	1	1	1	2	4	3	3	4	5	4	3	6	1	4	3	2	4	5	4	2	1	1
DELIVERY SCHEDULE	1	1	2	3	4	3	4	3	4	4	4	4	4	4	4	2						
CUM. TOTAL UNASSIGNED	0	0	+1	+2	+2	+2	+3	+2	+1	+1	+2	0	+3	+3	+4	+4	0					

SECRET

62-40502

FINANCIAL SECTION

FINANCIAL SECTION

[redacted]

FUNDING GUIDANCE

- PROGRAM FUNDED WITH REIMBURSABLE FUNDS
- R & D COSTS AMORTIZED BY USING PROGRAMS
- NO R & D EFFORT ON FOLLOW-ON CONTRACT
- COMPONENT IMPROVEMENT SUBMITTED & JUSTIFIED SEPARATELY
- AGENA D LINE ITEM IN BUDGET

UNCLASSIFIED

OVER CEILING

SECTION II - FINANCIAL ESTIMATES (Dollar Amounts in Millions to Two Decimals)			COMMAND OR OTHER AGENCY AFSC				SYSTEM PROGRAM NUMBER 648B			DATE PREPARED 2 April 1962		
DESCRIPTION 1	BUDGET/PROGRAM CODE 2	PRIOR YEARS 3	CURRENT FY 1962 DIRECTION 4	CURRENT FY 1962 ESTIMATES 5	FY 63 6	FY 64 7	FY 65 8	FY 66 9	FY 67 10	FY 11	BALANCE TO COMPLETION 12	TOTAL 13
57 X 3600 Research, Development, Test and Evaluation	6399	0	0	0	[redacted]	0	0	0	0	0	0	[redacted]

AFSC FORM FEB 62 216

UNCLASSIFIED

INDIVIDUAL JUSTIFICATION

[redacted]

[redacted]

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[redacted]

[redacted]

1044

[redacted]

[redacted]

[redacted]

IN CEILING

SECTION II - FINANCIAL ESTIMATES (Dollar Amounts in Millions to Two Decimals)	COMMAND OR OTHER AGENCY AFSC	SYSTEM PROGRAM NUMBER 648B	DATE PREPARED 2 April 1962

DESCRIPTION 1	BUDGET/ PROGRAM CODE 2	PRIOR YEARS 3	CURRENT FY 19 62		FY 63 6	FY 64 7	FY 65 8	FY 66 9	FY 67 10	FY 11	BALANCE TO COMPLETION 12	TOTAL 13
			DIRECTION 4	ESTIMATED 5								
57 X 3600 Research, Development, Test and Evaluation	6399	0	0	0	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

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[illegible] FOR [illegible] [illegible]

1. **NOMENCLATURE:** Horizon Sensor Mod III.

2. **SYSTEM:** [illegible]　　　　3. **PRIORITY:**

4. **DESCRIPTION:** The horizon sensor is a precision instrument which indicates the attitude of the Agena with respect to a local vertical defined by the earth's horizon. This unit detects pitch and roll attitude deviations, from the local vertical, to less than 0.1 degree. The sensor generates linear output signals which control pitch and roll attitudes of the Agena.

5. **SPACE PROGRAM EFFECT:** This unit will overcome the deficiencies indicated in Item 6 below. This unit will permit flexibility in the time of launch and use of the Agena. The reliability and life of the instrument will be improved to meet all the requirements of the using programs.

6. **JUSTIFICATION:** The horizon sensor should provide the Agena Vehicle with an accurate long term vertical reference which is required to assure proper attitude control during the Agena accent, orbit, and recovery phases. The accuracy of this attitude reference should approach ± 0.1°. The present horizon sensors available for use on the Agena have performance deficiencies which can only be corrected by a complete redesign approach.

The first deficiency is an attitude accuracy capability estimated to be on the order of ± 0.4°. This is inherent in the instrument mechanization and cannot be greatly improved by minor changes.

The second deficiency arises because the present Mod II sensors either fail to control the vehicle or control it erroneously during times when the sun is in the field of view. The two headed Mod II sensor system with its 2 large conical scans and large fields of view has a high probability of viewing the sun on at least one phase, (accent, orbit, or recovery), of many Agena missions. When the sun does fall within the field of view the first response of the sensor is to produce an attitude error. This error builds up until the head viewing the sun is disabled. When this occurs the system is capable of providing long-term pitch control only and roll reference is lost. With the present configuration this problem with the sun is insurmountable.

The present approach for overcoming this inadequate performance is to launch the vehicles during a very narrow launch window in which it is calculated that the horizon sensor will not view the sun. This is a severe limitation on the flexibility required of the Standard Agena.

The third deficiency is in the susceptibility of the present systems to earth infra-red gradients caused by high cold clouds. When severe IR gradients occur on the earth, the sensor responds and an attitude error is generated. Analysis of TIROS IR data has shown that these severe gradients occur much more frequently than was expected when the present sensors were designed.

More complete knowledge of the IR character of the earth is being accumulated. Utilizing this knowledge and advancements in the state-of-the-art presently available, all of these major deficiencies can be eliminated by the development of a new sensor.

7. DEVELOPMENT TIME: 15 Months.

8. PRODUCTION BREAK IN DATE: Oct 63

[redacted]

11. BUYER: Mr. E.S. Silberman
SESNK
X-3911

12. PROJECT ENGINEER:
Maj E.A. Lembeck
SEHAE-2
X-4013

COORDINATION: Edward L Blum
Deputy for Engineering 6488

APPROVAL: [illegible]
Director 6488
Col USAF

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. **NOMENCLATURE:** Velocity Meter.

2. **SYSTEM:** 64[illegible] 3. **PRIORITY:**

4. **DESCRIPTION:** The velocity meter measures the velocity gain and initiates engine cutoff at the desired velocity. The velocity meter consists of two major parts: A pulse output accelerometer and a pulse counter. The accelerometer produces output pulses, the rates of which are proportional to acceleration. The integral of this is simply the number of pulses.

5. **SPACE PROGRAM EFFECT:** Through the use of fewer and better parts, and better circuit design, power and weight will be reduced and reliability of the unit will increase. The resulting improvements are as follows:

a.	Estimated cost reduction per unit	[redacted]	15%
b.	Parts eliminated	205	40%
c.	Weight reduction	1.8	20%
d.	Power reduction	7.4 watts	40%
e.	Increase in MTBF of electronics	1950 hrs.	62%

6. **JUSTIFICATION:** The large number of field failures of the velocity meter due to the complexity have been a consistent problem over the last year. The redesign is based on past experience with the present velocity meter from both flight units and test programs, as well as recently completed reliability testing and design reviews. The performance specifications are the same. The production of 22 of the simplified redesigned units will pay for the cost of the development program and the present production rate is scheduled at 7 units per month.

7. **DEVELOPMENT TIME:** 4 Months

8. **PRODUCTION BREAK IN DATE:** Since this unit is a direct interchangeable replacement, unit can be installed as soon as delivered.

9. COSTS:	FY 63	FY 64	FY 65
	[redacted]	$ 0	$ 0

10. **TOTAL COST:** [redacted]

11. **BUYER:** Mr. E.S. Silberman
SSHDK
X-3911

12. **PROJECT ENGINEER:** Maj E.A. Lambeck
SSHAB-2
X-4013

COORDINATION: Edward F Blum Lt Col
Deputy for Engineering 64[illegible]

APPROVAL: Col USAF
Director 64[illegible]

REQUIREMENT FOR COMPONENT DEVELOPMENT

1. **NOMENCLATURE:** Mod IV Inertial Reference Package (IRP).

2. **SYSTEM:** 648

3. **PRIORITY:**

4. **DESCRIPTION:** The IRP provides a three-axis attitude reference system for the Agena after separation from the booster. It senses angular rates in the three axes of the Agena. These rates appear as torque on the gyro gimbal which is summed with torque produced by the torque generator. The gyro outputs are fed through pre-amplifiers to the flight control package. Incorporated in the IRP will be three accelerometers to correct for thrust misalignment and to measure velocity.

5. **SPACE PROGRAM EFFECT:** In addition to improved performance and reliability, costs for the guidance and control subsystem will be reduced [redacted] The elimination of the velocity meter will reduce number of aligned components reducing assembly and checkout time.

6. **JUSTIFICATION:** The IRP provides an attitude reference with respect to inertial space and signals from the gyros are supplied to the flight control system to cause the vehicle to align itself with the reference. The present IRP uses gyros that were relatively inexpensive and available in reasonable quantities when the IRP was designed. During the past two years more accurate and reliable gyros have been perfected and are available from several manufacturers. One such gyro is now being used in the roll channel of a few of the present IRP's. No capability exists, either in the present IRP or the Agena vehicle, for thrust misalignment indications and control signals for correcting for thrust misalignment in flight. The proposed development is for a more accurate and versatile IRP utilizing the improved gyros in all three channels and employing three accelerometers for the determination of thrust misalignment. One of the accelerometers will be a high accuracy accelerometer, with the associated circuitry, capable of being used in lieu of the present velocity meter. Additional improvements such as simplified circuitry, use of more modern electronic construction techniques, better interchangeability of gyros from several vendors, and reduced power requirements and weight, will be incorporated. Drift rates of an order of magnitude lower than those available with the present gyros will be attained. The estimated costs include three (3) qualified units for test and evaluation.

7. **DEVELOPMENT TIME:** 18 Months

8. **PRODUCTION BREAK IN DATE:** ~~Oct 63~~ Jan 64

9. **COSTS:** [redacted] 1044 [redacted]

UNCLASSIFIED

10. TOTAL COST: [redacted]

11. BUYER: Mr. E. C. Silberman
[illegible]
X-3015

12. PROJECT ENGINEER: Maj W.T. Jones
[illegible]-2
X-3013 4/41

COORDINATION: Edward Z Blum LtCol
Deputy for Engineering 6488

APPROVED: [illegible]
Director 6488
Col USAF

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UNCLASSIFIED

REQUIREMENT FOR COMPONENT DEVELOPMENT

1. NOMENCLATURE: Solid State Programmer.

2. SYSTEM: 6[illegible] 3. PRIORITY:

4. DESCRIPTION: The programmer originates switching signals, guidance and control functions that include actuation of hydraulic and pneumatic controls and programming of pitch and yaw command rates. Also, the programmer provides switching signals for firing squibs for ullage and retro-rocket functions, calibrating telemetry, and firing payload-interface connector squibs. The proposed development is for a solid-state digital device having the following basic specifications:

a. Weight less than 22 pounds.

b. Size less than 450 cu. inches.

c. Average power less than 20 watts with peak power less than 50 watts from unregulated 28 volts dc source.

d. Timing accuracy of .001% ± 10 milliseconds of the set time.

e. 63 switching functions.

f. Duration of timing in excess of 36 hours.

g. Capable of being programmed from an external source both ground and airborne.

h. Readout of programmed functions.

5. SPACE PROGRAM EFFECT: This is an essential item for the Standard Agena since it permits flexibility in programming for many different missions. The reliability and performance will be increased many fold by eliminating the mechanical functional items.

6. JUSTIFICATION: The present sequence timer consists of a synchronous motor driving cam operated micro-switches through speed reduction gears. The timing capabilities are limited to 24 events over a period of 6000 seconds. The present timer has, in several cases, jeopardized schedules because of difficulties involved in reprogramming the sequence of events at the launch base because of mission changes, etc. The limited number of events available on the present timers results in combining several events on most switches, which represents a compromise as to the optimum time for some of the events. To alleviate this problem and/or extend the timing period several programs require two timers in order to accomplish their mission. Therefore, a requirement exists for a more versatile programmer which can provide ease and flexibility of programming plus additional capacity. Estimated costs include three qualified units for tests and evaluation.

7. DEVELOPMENT TIME: 18 ~~19~~ Months.

8. PRODUCTION BREAK IN DATE:
~~October 65~~ Jan 66

[redacted]

[redacted]

11. BUYER: ~~Mr. R. S. [illegible]~~
~~SSMK~~
~~X-3911~~

12. PROJECT ENGINEER:
CAPT. R. L. Stone
SSHAE-2
~~X-4013~~ 4141

COORDINATION: Edward L Blum Lt Col
Deputy for Engineering 648B

APPROVAL: Henry B. Kucheman Jr. Col USAF
Director 648B

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. NOMENCLATURE: Flight Control Electronics & Junction Boxes.

2. SYSTEM: 648B

3. PRIORITY:

4. DESCRIPTION: The junction boxes provide interconnection, switching, isolation and voltage division functions for the guidance and control equipment. The flight control electronics accepts guidance commands generated by the Inertial Reference Package and converts them into quantities compatible with the requirements of the pneumatic and hydraulic control elements. A series of switching signals from the primary sequence timer defines the modes of control system operation. Relays control power supplied to the electronics package, and they provide the on/off connection signal flow to the pneumatic valve elements. In addition, auxiliary circuits provide checkout, umbilical and telemetry functions.

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5. SPACE PROGRAM EFFECT: These units will simplify checkout and improve reliability.

6. JUSTIFICATION: With the development of a new Horizon Sensor, a Mod IV IRP, and a Yaw Indicator, Modifications of the junction boxes, and the flight control electronics are anticipated in order to accomodate the new or additional signals. The junction boxes provide interconnection, switching, isolation, power distribution, gain setting functions, and T/M signal conditioning for the guidance and control equipment while the flight control electronics accepts guidance commands generated by the IRP and converts these signals into quantities compatible with the requirements of the pneumatic and hydraulic control elements. Modifications are expected to be relatively minor in the case of the new IRP and Horizon Sensor, i.e. impedance matching, etc., however in the case of a yaw angle input, the primary junction box and flight control electronics will be required to accept and correct for an additional source of error.

7. DEVELOPMENT TIME: 1~~9~~ Months

8. PRODUCTION BREAK IN DATE: ~~Oct 63~~ Dec 63

[redacted]

11. BUYER: Mr. E. [redacted] Silberman
~~SSHRK~~
~~X-3911~~

12. PROJECT ENGINEER: Maj E.A. Lembeck
SSHAE-2
~~X-4013~~ 4147

COORDINATION: Edward J Blum Lt Col
Deputy for Engineering 648B

APPROVED:
Director 648B

Col BKR

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. **NOMENCLATURE:** 400 cps, 115 volt, 3 phase inverter.

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **DESCRIPTION:** This unit is 400 cps, 115 volt, 3 phase static inverter with extended capability for phase load unbalance to fulfill the system requirement for single phase power. The inverter is to weigh less than 17 pounds and to have power output in the range of 350 to 500 volt amps.

5. **SPACE PROGRAM EFFECT:** Will enhance the vehicle payload/mission capability by increasing the reliability and decreasing the overall weight, size, cost and complexity of the power system.

6. **JUSTIFICATION:** The present system utilizes both a 400 cps, 3 phase and 400 cps, 1 phase 115 units. Total weight not including wiring is in the neighborhood of 27 pounds; the proposed unit would be in the neighborhood of 15-17 pounds. Volumetric efficiency would show a similar increase. Although the cost of the new unit would be slightly higher than the cost of the present unit, total cost would show a significant decrease due to the elimination of the additional single phase unit. Fewer total parts would be required thereby increasing reliability.

7. **DEVELOPMENT TIME:** 6 Months.

8. **PRODUCTION BREAK IN DATE:** 90 Days after completion of development.

9. [redacted]

10. [redacted]

11. **BUYER:** Mr. E. S. Silberman
SSHDK
X-3911

12. **PROJECT ENGINEER:** Capt W.H. Ritchie
SSHAE-1
X-4121

COORDINATION: Edward L Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B
Col USAF

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. **NOMENCLATURE:** DC to DC Converters.

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **DESCRIPTION:** The present DC to DC converter supplies regulated plus and minus voltages to the Guidance and Control System of the Agena "D". Proposed product improvement would provide for "state-of-the-art" improvements of the present converter after completion of testing covered under the present contract. This effort would cover only the incorporation of minor design changes realized by the improvement of piece parts, changes due to specific problem areas, or significant requirement changes as a result of improvements in the Guidance and Control area.

5. **SPACE PROGRAM EFFECT:** As a result of expanded usage, better evaluation and better parts, the reliability of the units will be increased. Provisions will be made to incorporate the requirements of MIL I 26600 "Interference Control Requirements".

6. **JUSTIFICATION:** There is insufficient usage on the present units to determine if specific problem areas exist; the proposed product improvement would cover such areas as determined by experience with these units. Continued piece parts improvements are being made which should be incorporated on a scheduled timely basis. Further, product improvements in the Guidance and Control area could result in requirement changes thereby dictating a change or changes in the power supply.

7. **DEVELOPMENT TIME:** 15 Months. 8. **PRODUCTION BREAK IN DATE:** Oct 63

9. [redacted]

10. [redacted]

11. **BUYER:** Mr. E. S. Silberman
SSHDK
X-3911

12. **PROJECT ENGINEER:** Capt A.R. Ellisen
SSHAE-1
X-4121

COORDINATION: Edward Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. NOMENCLATURE: Primary Battery.

2. SYSTEM: 648B

3. PRIORITY:

4. DESCRIPTION: This battery has 16 silver proxide zinc cells and uses potassium hydroxide as the electrolyte. Battery will weigh less than 110 pounds and will have amp hour rating in excess of 400.

5. SPACE PROGRAM EFFECT: This battery will have improved reliability, producibility without increase in costs.

6. JUSTIFICATION: This battery will have an increase in capacity greater that 15 percent. The present batteries have a minus 3 sigma value of 8200 watt hours. This new development will provide batteries with a minimum of 10,000 watt hours. With the present batteries the watt hour spread between minus 3 sigma and nominal watt hour rating is in excess of 10 percent, however with improvement in control of manufacturing of positive plates the watt hour spread will be approximately 3 percent; thereby permitting a more accurate forecast of power available for the Agena vehicle.

7. DEVELOPMENT TIME: 15 Months

8. PRODUCTION BREAK IN DATE: Oct 63

9. [redacted]

10. [redacted]

11. BUYER: Mr. E.S. Silberman
SSHDK
X-3911

12. PROJECT ENGINEER: Maj L.A. Daggett
SSHAE-1
X-4121

COORDINATION: Edward H. Blum Lt Col
Deputy for Engineering 648B

APPROVAL: Col [illegible]
Director 648B

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. **NOMENCLATURE:** Yaw Attitude Indicator.

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **DESCRIPTION:** This is a device which will detect yaw attitude deviations and generates output signals which control yaw attitude of the Agena.

5. **SPACE PROGRAM EFFECT:** This unit will improve the capability of obtaining desired orbits or trajectories. The yaw indicator will increase the capability to analyse attitude data from Agena vehicles.

6. **JUSTIFICATION:** It has become more evident with each Agena launch, that an accurate, independent, yaw attitude sensor is required. Presently available equipment such as the Sun Position Indicator is either too inaccurate or as with the control moment gyros is coupled into the attitude system in a manner which does not allow interpretation of the data. During ascent and on orbit the yaw attitude of the Agena is controlled by a gyro compassing technique, relys on the pitch and roll motion of the vehicle. Any errors in roll Horizon Sensing will cause a yaw error which cannot be measured or corrected with the present system. An accurate indicator is not only needed for readout and subsequent vehicle motion analysis, but as a yaw reference input to the control system.

7. **DEVELOPMENT TIME:** 18 Months. 8. **PRODUCTION BREAK IN DATE:** 1 Jan 64

9. [redacted]

10. [redacted]

11. **BUYER:** Mr. E. S. Silberman
SSHDK
X-3911

12. **PROJECT ENGINEER:** Capt R.L. Stone
SSHAE-2
X-4013

COORDINATION: Edward J Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. NOMENCLATURE: Electro-explosive Device Range Requirements.

2. SYSTEM: 648B 3. PRIORITY:

4. DESCRIPTION: This analysis, design and development effort would provide electro explosive devices (EED's) capable of meeting launch base requirements. LMSC would conduct in-house analysis work, procure samples of existing hardware developed for other programs and conduct tests of this hardware. At the same time the Franklin Institute would conduct tests of the present Agena hardware to determine its capability of meeting a 100 watts/sq. meter condition. Following this and depending upon the results a development and qualification program will be conducted. The electrical aspects of the EED's will be investigated to determine the optimum design for lamp, 1 watt "No Fire" for each type of EED. Then tests will be conducted of the selected designs to determine current vs function time for various combinations of temperatures and pressures. In addition Bruceton Analyses of the designs for no fire, all fire, recommended current, etc. will be conducted. The electrical work will be followed by performance evaluation of each type of EED to check peak pressure and function time at ambient conditions for minimum "All Fire" and recommended "Fire Current". Peak pressure and function time will be checked at low temperatures, high temperatures, after thermal cycling and after altitude exposure. Auto ignition temperature will be established and environmental tests conducted (acceleration, vibration, shock, etc.) Following these tests, qualification and reliability programs will be conducted.

Other vehicle electrical aspects will be investigated such as: 1) the possibility of a new battery design and qualification just for EED operation, 2) lengthening the D-timer, and requalifying it, to provide for additional switches required by the added power in parallel operation of squib actuated devices.

5. SPACE PROGRAM EFFECT: All programs will be effected when the range requirements are strictly enforced. AGE will require modifications to meet higher current requirements.

6. JUSTIFICATION: AMR has temporarily relaxed their very strict requirements that all EED's be capable of withstanding no-fire criteria of one amp for 5 minutes, one watt for 5 minutes and 2 watts for 5 minutes of real power where RF attenuation is provided. Present information indicates that compliance with these requirements will be mandatory 1 January 1963 for all systems, with a waiver period extending to 1 January 1964. PMR is also revising their no-fire requirements for all new vehicles and is favoring the use of a specified range environment.

REQUIREMENT FOR COMPONENT IMPROVEMENT, Cont.

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7. DEVELOPMENT TIME: 14 Months

8. PRODUCTION BREAK IN DATE:
Sep '63
(Note: M-79 squibs should be available sooner depending upon how Agena D chooses to fund that work)

9. [redacted] FY65

10. [redacted]

11. BUYER: Mr. E. S. Silberman
SSHDK
X-3911

12. PROJECT ENGINEER; Capt G.W. Watts
SSHAA-2
X-3913

COORDINATION: Edward L Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. NOMENCLATURE: Orbit and Nuclear Radiation Effects on Electro-Explosive Devices

2. SYSTEM: 648B 3. PRIORITY:

4. DESCRIPTION: This investigation would be directed toward determining the effects of orbit and nuclear radiation on electro-explosive devices (EED's). The explosive effects will be measured at the time the explosive device is to be irradiated such as 1) threshold energies for initiation, 2) transient times of reaction. The explosive behavior after being removed from the radiation field will be measured. The change produced in explosives as a result of exposure to radiation at several dosage rates will be considered. The explosives will be irradiated and then the physical characteristics (tensile strength, etc), the burning rate as a function of time, the explosive characteristics, and the performance characteristics will be checked.

This will be a two phase program with Phase I as described above, to determine problem areas, and Phase II to study the problems uncovered during Phase I and determine solutions if possible.

5. SPACE PROGRAM EFFECT: By evaluating orbit and nuclear radiation effects on EED's, redesigns or shielding may be established to increase the reliability of EED activated functions.

6. JUSTIFICATION: Little information is presently available on radiation effects on EED's. Many orbit and de-orbit operations depend on their reliable operation after exposure to radiation.

7. DEVELOPMENT TIME: 15 Months 8. PRODUCTION BREAK IN DATE: Unknown. Depends on problems uncovered.

9. COSTS: [redacted] 1044 [redacted] FY65

(*Note: This cost is for Phase I only. Phase II costs are underminable at this time.)

REQUIREMENT FOR COMPONENT IMPROVEMENT, Cont.

10. TOTAL COST: [redacted] (Phase I only)

11. BUYER:	Mr. E. S. Silberman SSXDK X-3911	12. PROJECT ENGINEER:	Capt G.W. Watt SSHAA-2 X-3913

COORDINATION: Edward H Blum Lt Col
Deputy for Engineering 648B

APPROVAL: Henry B. Fudema
Director 648B
Col USAF

REQUIREMENT FOR COMPONENT IMPROVEMENT, Cont.

10. TOTAL COST: [redacted] (Phase I only)

11. BUYER: Mr. E. S. Silberman
SSXDK
X-3911

12. PROJECT ENGINEER: Capt G.W. Watt
SSHAA-2
X-3913

COORDINATION: Edward F Blum Lt Col
Deputy for Engineering 648B

APPROVAL: Henry B. Fydeman
Director 648B
Col USAF

REQUIREMENT FOR COMPONENT IMPROVEMENT

1. NOMENCLATURE: Massachusetts Institute of Technology Support.

2. SYSTEM: 648B
3. PRIORITY:

4. DESCRIPTION: This is "on call" technical support by M.I.T. Instrumentation Laboratory to assist SSD and LMSC in guidance and control problems.

5. SPACE PROGRAM EFFECT: This support provides fast reaction capability for Agena guidance and control problems, and technical support to Space System Division.

6. JUSTIFICATION: Since 1954, the MIT Instrumentation Laboratory has supported the guidance and control effort of the Agena office through design of attitude control systems, computer studies for feasibility and system optimization, continual consultation in gyro and attitude control techniques, and active participation in guidance and control conferences with LMSC. In addition to work of an advanced engineering nature, MIT also serves to check results of various LMSC studies by taking an independent approach to the problem using more complete and theoretically accurate equations. Usually this is in the form of computer analyses, a field in which MIT has considerable experience, capability and equipment. The Agena program should continue to take advantage of their demonstrated capability and intimate knowledge of the Agena vehicle. The estimated cost of this support is $300,000 annually; the present contract expires 31 December 1962. It is requested that the budget for FY 63 include $150,000 and future budgets include $300,000 each year for this continued effort.

7. DEVELOPMENT TIME: N/A
8. PRODUCTION BREAK IN DATE: N/A

9. COSTS: [redacted] 1044 [redacted]

10. TOTAL CO[redacted]

11. BUYER: Mr. E.S. Silberman
SSHDK
X-3911

12. PROJECT ENGINEER: Maj E.A. Lembeck
SSHAE-2
X-4013

COORDINATION: Edward L Blum Lt Col
Deputy for Engineering 648B

APPROVAL: Col USAF
Director 648B

REQUIREMENT FOR GENERAL ENGINEERING

1. **NOMENCLATURE:** General Engineering

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **JUSTIFICATION:** General Engineering consists of the System Engineering, Detail Design, and other engineering activities needed to:

a. Diagnose faulty behavior of the design as revealed in flight or on the production line; then create, qualify, and phase-in appropriate fixes.

b. Introduce specific component improvement items into the total system.

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Whenever flight results or production problems are judged by on-the-scene personnel to reflect a deficiency in the Agena D design, it will be necessary for Agena D engineers to enter the picture and confirm whether a design (or system) problem exists. Then, where the problem is real, effort must be organized quickly to change designs, documentation, or other factors to solve it. Design changes should be subjected to design review as well as to the testing in the System Development Laboratory prior to (or, as an absolute minimum, concurrent with) their introduction into production. Many of the changes will also affect documentation, checkout equipment, logistics planning, interface with using programs, and other related activities.

In like fashion, as component improvement activities progress, their impact on each other and on the remainder of the systems requires careful analysis and coordination. Improvements that approach maturity must be subjected to design review and system testing to catch unforeseen side effects before it is too late. In some cases incidental changes will be necessary elsewhere in the system to accommodate a major component improvement; these must be identified, designed, and qualified.

5. **DEVELOPMENT TIME:** Continuing Effort

6. **COSTS:** [redacted]

7. **TOTAL COSTS:** [redacted]

8. **BUYER:** Mr. E. S. Silberman
SSHDK
Ext 3911

9. **PROJECT ENGINEER:** Lt Col E. F. Blum
SSHD
Ext 4141

COORDINATION: Edward F Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR GENERAL ENGINEERING

1. **NOMENCLATURE:** General Engineering

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **JUSTIFICATION:** General Engineering consists of the System Engineering, Detail Design, and other engineering activities needed to:

a. Diagnose faulty behavior of the design as revealed in flight or on the production line; then create, qualify, and phase-in appropriate fixes.

b. Introduce specific component improvement items into the total system.

Whenever flight results or production problems are judged by on-the-scene personnel to reflect a deficiency in the Agena D design, it will be necessary for Agena D engineers to enter the picture and confirm whether a design (or system) problem exists. Then, where the problem is real, effort must be organized quickly to change designs, documentation, or other factors to solve it. Design changes should be subjected to design review as well as to the testing in the System Development Laboratory prior to (or, as an absolute minimum, concurrent with) their introduction into production. Many of the changes will also affect documentation, checkout equipment, logistics planning, interface with using programs, and other related activities.

In like fashion, as component improvement activities progress, their impact on each other and on the remainder of the systems requires careful analysis and coordination. Improvements that approach maturity must be subjected to design review and system testing to catch unforeseen side effects before it is too late. In some cases incidental changes will be necessary elsewhere in the system to accommodate a major component improvement; these must be identified, designed, and qualified.

5. **DEVELOPMENT TIME:** Continuing Effort

6. **COSTS:** [redacted]

7. **TOTAL COSTS:** [redacted]

8. **BUYER:** Mr. E. S. Silberman
SSHDK
Ext 3911

9. **PROJECT ENGINEER:** Lt Col E. F. Blum
SSHD
Ext 4141

COORDINATION: Edward F Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR DEVELOPMENT TEST LABORATORY

1. **NOMENCLATURE:** Development Test Laboratory

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **JUSTIFICATION:** A Development Test Laboratory, currently being established, will be needed during this time period to support the continuing Agena D engineering activity. Changes found necessary as a result of flight failures and/or marginal behavior seen in flight must be "qualified" in a system sense before incorporation into the Agena D production line. If this were not done there would be serious risk of additional failure due to unforeseen side effects of innocent-appearing changes; furthermore, the production activity would be slowed and rendered inefficient by the introduction of untested changes.

Similarly, substantial changes resulting from component improvement or other value-engineering type activities should be validated in the laboratory before committing them to production.

The laboratory will permit checking interaction of a given change with the remainder of its subsystem and with other subsystems of the vehicle. In addition, it will afford an opportunity to check the interaction with various payloads before they are frozen.

The proposed amount will support a cadre of laboratory personnel to maintain the laboratory as a facility and to conduct tests at a "normal" level which Program 648B has been directed to fund. Additional personnel may be required under special circumstances; presumably supplementary funds would be available from using programs to support major activities involving mission-peculiar items.

5. **DEVELOPMENT TIME:** Continuing Effort

6. **COSTS:** [redacted] [redacted] [redacted]

1044

7. **TOTAL COSTS:** [redacted]

8. **BUYER:** Mr. E S. Silberman
SSHDK
Ext 3911

9. **PROJECT ENGINEER:** Major J. Barnes
SSHD
Ext 3911

COORDINATION: Edward F. Blum Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR RELIABILITY PROGRAM

1. **NOMENCLATURE:** Reliability Program

2. **SYSTEM:** 648B 3. **PRIORITY:**

4. **JUSTIFICATION:** A substantial effort will be made by reliability engineers to upgrade the existing reliability of selected critical items. The engineering design will be reviewed for reliability adequacy and control and specific recommendations will be made. Attention will be directed to production operations and the logistics phases to assure reliability achievement in reliability engineers and also diagnose flight failures and malfunctions. Continual effort will be made on system failure mode analysis and changes will be expeditiously processed. This is a continuation of the current reliability program.

Reliability will be a major factor in planning, management and engineering in all component improvement. Reliability requirements will be established for each new design consistent with the reliability objectives on existing designs. Modified designs will be given reliability requirements where appropriate. Emphasis on design for reliability will result in a mature design of hardware suitable for production and use in the operational environment. Hi-reliability parts and preferred parts will be used in each new and modified design and reliability and design engineers will assure that the parts are properly applied in the system. Prediction of reliability and measurement of achieved reliability will be performed at pre-planned steps throughout the design, development and evaluation. Reliability engineers will work with design, manufacturing and purchasing to assure control of reliability. This planned approach is necessary to minimize subsequent degradation of inherent reliability of the design due to variations in manufacturing, maintenance, storage, transportation, and/or operational process. In order to mature the design as early as possible, collected analysis and feed back of information to the responsible action organization will be accomplished. The plan for demonstration of the achieved reliability of each new and modified design will be implemented to assure compliance with the requirements.

5. **DEVELOPMENT TIME:** Continuing Effort

6. **COSTS:** [redacted] [redacted] [redacted]

7. **TOTAL COSTS:** [redacted]

8. **BUYER:** Mr. E. S. Silberman
SSXDK
Ext 3911

9. **PROJECT ENGINEER:** Major D. Kennedy
SSHAR
Ext 4063

COORDINATION: Edward H. [illegible] Lt Col
Deputy for Engineering 648B

APPROVAL:
Director 648B

REQUIREMENT FOR SANTA CRUZ TEST BASE SUPPORT:

1. **NOMENCLATURE:** Santa Cruz Test Base Support

2. **SYSTEM:** 648B   3. **PRIORITY**

4. **JUSTIFICATION:** The Santa Cruz Test Base is used by LMSC for remote tests of a hazardous nature. Testing of the rocket engine, ullage rockets, propellants, complete propulsion system, pneumatic and hydraulic systems, destruct devices, pyrotechnics and prima cord separation devices, is accomplished at this test base. This support effort is required to support the flight test program and the production line. Exploration of equipment failures and/or redesign must be tested before incorporation in the production vehicles. All changes that effect equipments that require testing of a hazardous nature will be tested at SCTB. This must be done on the component, subsystem and system basis in order to insure reliability improvement.

The effort proposed under this item will provide a minimum effort to support testing that can be envisioned by previous experience in flight failures, design changes and to support the component improvement program as proposed. SCTB will be partially supported in FY 63 by the Agena B programs.

5. **COST:** [redacted] [redacted] [redacted]

1044

7. **TOTAL COSTS:** [redacted]

8. **BUYER:** Mr. E. S. Silberman
SSHDK
Ext 3911

9. **PROJECT ENGINEER:** Lt Col R. Le Beck
SSHAA
Ext 3940

COORDINATION: Edward J Blum Lt Col
Deputy for Engineering, 648B

APPROVAL:
Director, 648B

REQUIREMENT FOR AEROSPACE GROUND EQUIPMENT

1. **NOMENCLATURE:** Aerospace Ground Equipment (AGE)

2. **SYSTEM:** 648B   3. **PRIORITY:**

4. **JUSTIFICATION:** Aerospace Ground Equipment (AGE) consists of two manual test stations and one automatic test station. Each test station consists of electrical and mechanical test equipment necessary to perform an integrated system checkout of the Agena D production vehicle and certain selected optional and mission peculiar equipment. AGE requirements during this time period are based upon two separate considerations. First, AGE will be required to accommodate the vehicle changes approved as block changes to the previous configurations. Such changes will require both new and improvements or modifications to existing AGE. Secondly, new test procedures and programming for the automatic checkout equipment will be required. Test procedure changes are required as a result of vehicle changes, use of new or improved AGE and changes to existing procedures caused by improved testing techniques and requirements. Automatic checkout equipment programming changes will be required for each change of the test procedure as described by the test procedure changes enumerated above.

5. **DEVELOPMENT TIME:** Continuing Effort

6. **COSTS:** [redacted] [redacted] [redacted]

7. **TOTAL COSTS:** [redacted]

8. **BUYER:** Mr. E. S. Silberman
SSHDK
Ext 3911

9. **PROJECT ENGINEER:** Lt Col J. S. Plummer
SSHD
Ext 3911

COORDINATION: Edward J [illegible] Lt Col
Deputy for Engineering, 648B

APPROVAL:
Director, 648B

~~SECRET~~

169

[redacted]

SPACE SYSTEMS DIVISION

UNITED STATES AIR FORCE

REIMBURSABLE FUND REQUIREMENT
FOR
648B - AGENA D

2 APRIL 1962

DOWNGRADED AT 12 YEAR INTERVALS
NOT AUTOMATICALLY DECLASSIFIED
DOD DIR 5200.12

~~SECRET~~

SSH-1

~~CONFIDENTIAL~~

FOREWORD

1. This document is submitted in conformance with AFSC direction to validate the FY-63 reimbursable funds required to provide Agena D's to support approved Space Systems Division requirements.

2. Hq USAF has directed that the Agena D program be funded with reimbursable funds. The individual vehicle users will transfer program funds to replenish the reimbursable account upon Agena D delivery.

3. Approval of this plan will provide for completion of the basic R&D and 12 vehicle buy plus a 39 vehicle follow-on procurement.

Approved by
HENRY B. KUCHEMAN, JR.
Colonel, USAF
Deputy for Agena

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~CONFIDENTIAL~~

UNCLASSIFIED

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UNCLASSIFIED

PROGRAM SUMMARY

PROGRAM SUMMARY

A. Authorization

1. The increased activity in space programs generated interest in feasibility of designing a standardized AGENA vehicle to perform the necessary ascent functions common to all space programs. On 30 June 1961 the AGENA standardization study was authorized. This study proved technical feasibility, and on 25 August 1961 LMSD was authorized to develop and manufacture twelve (12) "Standard AGENA" vehicles with a first launch programmed for January 1963.

2. On 17 October 1961 the Honorable Dr. Joseph V. Charyk, Under Secretary of the Air Force, appointed a special committee chaired by Mr. Clarence L. Johnson to investigate ways and means of providing a more reliable AGENA on an accelerated schedule. This committee recommended acceleration, and on 7 November 1961 Dr. Charyk and General B. A. Schriever authorized go-ahead on the present accelerated schedules.

B. Program Objectives

1. The prime objectives of the accelerated AGENA D program are two-fold:

   a. To produce a more reliable standardized basic vehicle capable of performing essential ascent and/or orbital functions derived from common mission requirements or all satellite system programs.

   b. To provide a fixed-price procurement source for AGENA D vehicles.

2. To accomplish these prime objectives the Johnson committee basic ground rules have been implemented and govern the development of the AGENA D. In general, these ground rules apply a streamlined AF/Contractor management concept and include a DX priority, reduction in formal procedures, inclosed area, and extraordinary program management channels.

C. Contracts

1. The basic (AF 04(695)-21) contract provides for delivery of 12 flight vehicles, plus one DTV with the first AGENA D launch scheduled for June 1962. This contract also provides for the necessary tooling to support a five-per-month production rate.

2. The follow-on (AF 04(695)-68) contract will provide production line units at a rate commensurate with consolidated space program requirements on a fixed-price basis.

D. Funding Guidance

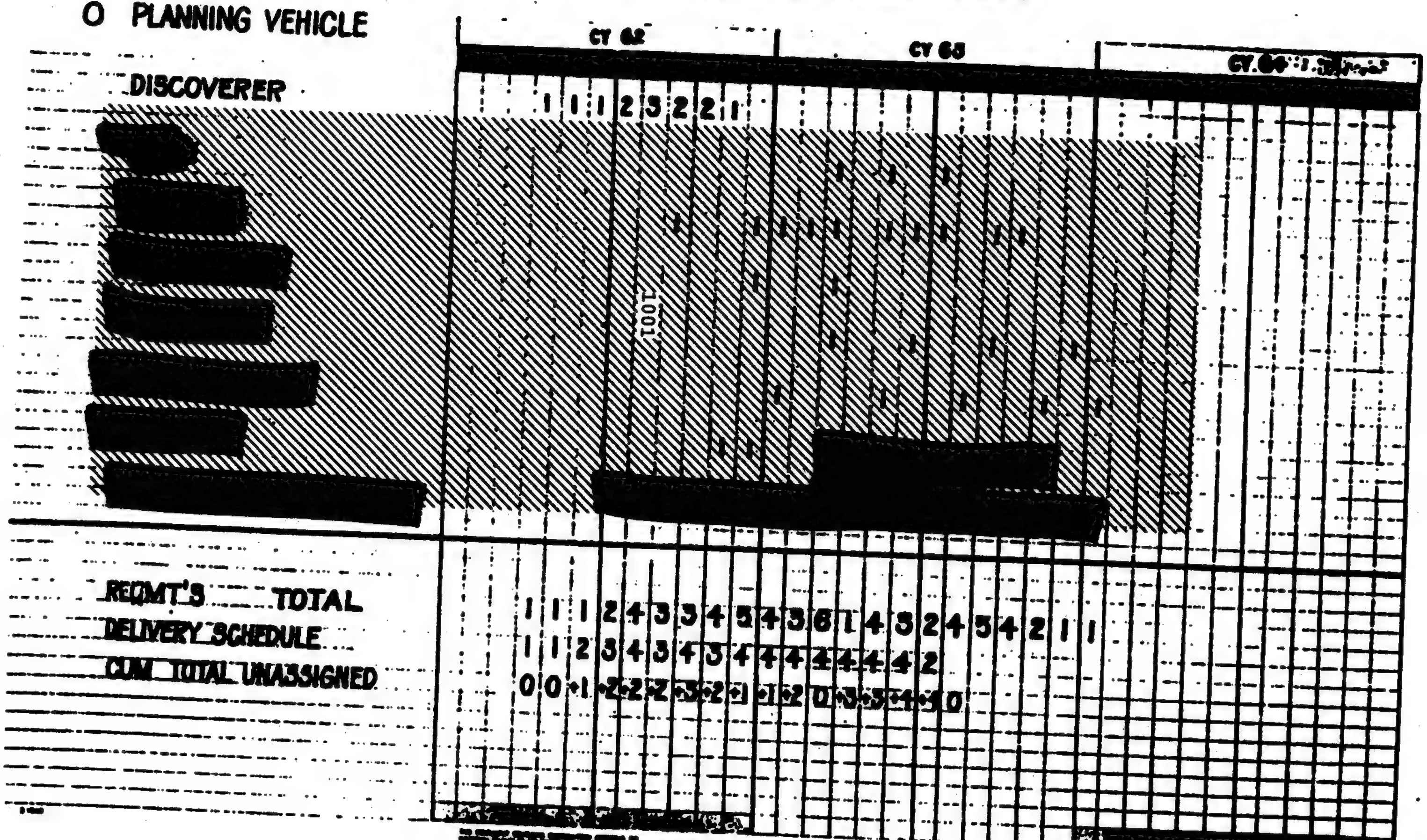
1. Reimbursable funds will be used to fund the AGENA D program with program funds transferred to the reimbursable account upon AGENA D DD-250 delivery to the using program.

2. Hq USAF has directed that the R&D effort on the basic (AF 04(695)-21) contract will be amoritzed among the program users.

MASTER SCHEDULE

~~SECRET~~

AGENA D-REQMTS SUMMARY



[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

REQMT'S TOTAL 1 1 1 2 4 3 3 4 5 4 3 6 1 4 3 2 4 5 4 2 1 1

DELIVERY SCHEDULE 1 1 2 3 4 3 4 3 4 4 4 4 4 4 4 2

CUM TOTAL UNASSIGNED 0 0 +1 +2 +2 +2 +3 +2 +1 +1 +2 0 +3 +3 +4 +1 0

SECRET

FINANCIAL SECTION

FINANCIAL SECTION

1. The FY-63 reimbursable fund requirements are based on a procurement of 39 production AGENA D's on a delivery schedule as reflected on the master schedule Section 2-1. The long lead requirement of 21.880M is to provide for long lead procurement to satisfy Space System Division requirements for AGENA D's during FY-64.

2. The schedule for reimbursement of the reimbursable funds as shown on 3-3 indicates a break even point at the 35th Agena D (23rd production vehicle) for amortization of the R&D effort on the Agena D. From this point forward, the using programs will be charged the fixed price for an Agena D vehicle. The current estimate of this fixed price is 1.3M/vehicle.

6399 REIMBURSABLE FUNDS [redacted]

PRIOR YEARS

[redacted]

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

[redacted]

[redacted] [redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]

[redacted] [redacted]
1044

[redacted]

[redacted]

[redacted] [redacted]

[redacted] [redacted] [redacted]

[redacted] [redacted]

[redacted]

DOWNGRADED AT 12 YEAR INTERVALS
NOT AUTOMATICALLY DECLASSIFIED
DOD DIR 5200.10

file
765

2 APR 1962

[illegible]

[illegible] for Component Improvement Propulsion Advisory Committee

[illegible]

1. Reference your recent request the following component improvement projects are submitted for the consideration of the Research and Development Propulsion Advisory Committee:

a. N_2O_4 AGENA Rocket Engine

b. Bi-Propellant Attitude Control System

2. The N_2O_4 AGENA Rocket Engine is considered a worthwhile advancement for an engine in this propulsion thrust class. The development was not considered favorably by the Program Budget Review Committee, SSD; because it was viewed as a major expenditure which could engender a complete redesign of the AGENA vehicle, not contemplated at this time.

3. The Bi-Propellant Attitude Control System was not presented to the PBRC. The project represents an advancement in the state of the art and if adopted would replace any cold gas system in use today.

4. Both projects are presented herewith to the Propulsion Advisory Committee for consideration in their future deliberations.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director
for Agena

1 Atch
Duplicate - Requirement for
Component Improvement

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CPFF-? **NEGOTIATED CONTRACT** CODE/[illegible]		Air Force	6 April 1962	1
[illegible] See Cover Page [illegible]	10 U.S.C. 2304(a)(11)	None	AF 04(695)-21 Class: None	

ISSUED BY Headquarters
Space Systems Division
Air Force Systems Command
Air Force Unit Post Office
Los Angeles 45, California
Buyer: E. S. Silberman/SSHD

ADMINISTERED BY Administrative Office
Air Force Plant Representative Office
Lockheed Aircraft Corporation
(Lockheed Missiles & Space Company)
Post Office Box 504
Sunnyvale, California

CONTRACTOR (Name and Address)
Lockheed Aircraft Corporation
(Lockheed Missiles & Space Company)
Post Office Box 504
Sunnyvale, California

PAYMENT WILL BE MADE BY
Air Force Plant Representative Office
Attn: Comptroller Services Division
Lockheed Aircraft Corporation
Post Office Box 551
Burbank, California

SHIP TO (Consignee and Address)
See Part III of the Schedule

DELIVERY F.O.B. ☐ DESTINATION ☒ OTHER (See Schedule)

DELIVERY DATE (S)
See Part II of the Schedule

ACCOUNTING AND APPROPRIATION DATA

See attached ACD

CONTRACTOR REPRESENTS

1. That it ☐ IS, ☒ IS NOT, a small business concern. Generally, a small business concern for the purpose of Government procurement is a concern that (1) is not dominant in its field of operation and, with its affiliates, employs fewer than 500 employees, or (2) is certified as a small business concern by the Small Business Administration. *(See Code of Federal Regulations, Title 13, Part* 121 *as amended, which contains the detailed definition and related procedures.)* If Contractor is a small business concern and is not the manufacturer of the supplies covered by this contract, it also represents that all supplies to be furnished hereunder ☐ WILL, ☐ WILL NOT, be manufactured or produced by a small business concern in the United States, its Territories, its Possessions, or The Commonwealth of Puerto Rico.
2. That it is a ☐ REGULAR DEALER IN, ☒ MANUFACTURER OF, the supplies covered by this contract.
3. (a) That it ☐ HAS, ☒ HAS NOT, employed or retained any company or person *(other than a full-time bona fide employee working solely for the contractor)* to solicit or secure this contract, and (b) that it ☐ HAS, ☒ HAS NOT, paid or agreed to pay any company or person *(other than a full-time bona fide employee working solely for the contractor)* any fee, commission, percentage or brokerage fee, contingent upon or resulting from the award of this contract; and agrees to furnish information relating to (a) and (b) above as requested by the Contracting Officer. *(For interpretation of the representation, including the term "bona fide employee", see Code of Federal Regulations, Title 44, Part 150.)*
4. That it operates as ☐ INDIVIDUAL ☐ PARTNERSHIP ☒ CORPORATION incorporated in the State of California
*is independently owned and operated.

The Contractor agrees to furnish and deliver all the supplies and perform all the services set forth in the attached Schedule, for the consideration stated therein. The rights and obligations of the parties to this contract shall be subject to and governed by the Schedule and the General Provisions. To the extent of any inconsistency between the Schedule or the General Provisions and any specifications or other provisions which are made a part of this contract, by reference or otherwise, the Schedule and the General Provisions shall control. To the extent of any inconsistency between the Schedule and the General Provisions, the Schedule shall control.

The total amount of this contract [redacted]

LOCKHEED AIRCRAFT CORPORATION
NAME OF CONTRACTOR

By________________________
SIGNATURE DATE

____
TYPED NAME

Title________________________

UNITED STATES OF AMERICA

By________________________
SIGNATURE OF CONTRACTING OFFICER DATE

EUGENE S. SILBERMAN
TYPED NAME OF CONTRACTING OFFICER

DD FORM 1 DEC 58 1261

[illegible] list QCCN is dtd 12 June 1962

[redacted]

COVER PAGE CONTINUED

DX Rating A-2 Certified Under DMS Regulation No. 1

FCR No: [illegible]-61-8-3

PR Nos: 62-SSD-188, 62-SSD-188-1, 62-SSD-188-2, 62-SSD-188-3, 63-SSD-188-4

Initiator of PRs: R. O. Kinder, LtCol, USAF/SSLPI

Government Bill of Lading - Shipments will be made on Government Bills of Lading according to the clause of this contract entitled "Government Bill of Lading". The cognizant transportation office for this contract is Transportation Officer (SMSP), Sacramento Air Materiel Area, McClellan Air Force Base, California.

Inspection Notification - When ready for inspection, or, if practicable, 10 days in advance thereof, notify Chief of the CMR office, AF Contract Management district (office), AF plant representative office, or other office, as the case may be, to which the contract has been assigned for administration, unless otherwise informed.

This definitive contract supersedes Letter Contract AF 04(695)-21, dated 25 August 1961, and all Amendments thereto.

ADMINISTRATIVE COMMITMENT DOCUMENT

TO DCCA Administrative Office:
Air Force Plant Representative Office
Lockheed Aircraft Corporation
(Lockheed Missiles & Space Company)
P. O. Box 504, Sunnyvale, California

DATE: 5 April 62

CONTRACTUAL INSTRUMENT NUMBER: AF 04(695)-21

CONTRACTOR: Lockheed Aircraft Corporation (Lockheed Missiles & Space Company)

PR ITEM NO.	CONT. ITEM NO.	CONTRACT QUANTITY	PR OR MIPR NUMBER AND ACCOUNTING CLASSIFICATION	UNIT PRICE	TOTAL COST
	1	12	PR 62-SSD-188 (Complete) 57X3600 247-8106 P6399.9960 S594200 2500		[redacted]
			PR 62-SSD-188-1 (Complete) 57X3600 247-8106 P6399.9960 S594200/[illegible] 2500 Sid		[redacted]
			PR 62-SSD-188-2 (Complete) 57X3600 247-8106 P6399.9960 S594200 2500 BLI B27		[redacted]
			PR 62-SSD-188-3 (Complete) 57X3600 247-8106 P6399.9960 S594200 2500 BLI B27		[redacted]
			PR 62-SSD-188-4 (Partial) 57X3600 247-8106 P6399.9960 S594200 BLI B27		[redacted]
			TOTAL		[redacted]
	2	All	PR 62-SSD-188-4 (Partial) 57X3600 247-8106 P6399.9960 S594200 BLI B27		[redacted]
	3	All	PR 62-SSD-188-4 (Partial) 57X3600 247-8106 P6399.9960 S594200 BLI B27		[redacted]
	4	All	PR 62-SSD-188-4 (Complete) 57X3600 247-8106 P6399.9960 S594200 BLI B27		[redacted]
			GRAND TOTAL		[redacted]
			This document supersedes all previous ACDs Contract AF 04(695)-21.		

PREPARED BY (Typed name, orgnl. code, telephone no., and signature)

Eugene S. Silberman/SSHDK/3911 R&D

The supplies and services to be obtained by this instrument are authorized by, are for the purpose set forth

and are chargeable to allotments enumerated above, the available balance of which is sufficient to cover the

in an amount not to exceed $ ....

DATE

SIGNATURE (Accounting Officer)

[redacted]

SCHEDULE

PART I - STATEMENT OF WORK

Item 1 - Twelve (12) Agena D vehicles in accordance with Exhibit 648B-100, entitled "Statement of Work, Accelerated Agena D Program", dated 13 February 1962, incorporated herein by reference.

Item 2 - Component improvement program in accordance with Exhibit 648B-101, entitled "Component Improvement Program, Contract AF 04(695)-21", dated 29 March 1962, incorporated herein by reference. The Contractor shall provide the services and material required under said Exhibit 648B-101 on a rate-of-effort basis as follows:

In-House Effort
(In Man-Months)

1962 Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Total
30.5	31.5	33.5	37.5	32.5	34.5	29	29	16	274

A tolerance of ± 10% of the rate-of-effort is authorized provided, however, that the total effort for the contract period shall not be exceeded.

Item 3 - Logistic support and spare parts in accordance with Exhibit 648B-102, entitled "Logistics Requirements", dated 1 February 1962, incorporated herein by reference.

Item 4 - Agena D/Titan III adaptability study in accordance with said Exhibit 648B-100.

PART II - DELIVERY

Item 1 - In accordance with said Exhibit 648B-100.

Item 2 - In accordance with said Exhibit 648B-101.

Item 3 - As necessary to provide timely support of the vehicles delivered under Item 1 above.

Item 4 - Forthwith upon receipt by Contractor of a duly executed copy of this contract.

PART III - **INSPECTION, ACCEPTANCE AND F.O.B. POINT**

The place of final inspection, acceptance and f.o.b. point for Items 1 and 3 shall be at Contractor's Plant, Sunnyvale, California; and for Items 2 and 4 shall be at Headquarters, Space Systems Division (AFSC), Attn: [illegible], Air Force Unit Post Office, Los Angeles 45, California. Item 3 shall be marked for: Central Logistic Storage Area, Agena D Spare Parts.

PART IV - **COST**

A. The target cost for Items 1 and 3 is [redacted]

B. The estimated cost for Items 2 and 4 is [redacted]

1044

PART V - **FEE**

A. The target fee for Items 1 and 3 is [redacted]

B. The fixed fee for Items 2 and 4 is [redacted]

PART VI - **TOTAL SUM ALLOTTED**

The total sum presently available for payment, and allotted to this contract is [redacted] which covers all items and the estimated period of performance said funds will cover expires 30 May 1962.

PART VII - **RELEASE OF NEWS INFORMATION**

No news release, public announcement, denial or confirmation of same on any part of the subject matter of this contract or any phase of any program hereunder shall be made without the prior written approval of the Information Office, Office of the Deputy Commander for Aerospace Systems.

PART VIII - **SECURITY REQUIREMENTS**

Pursuant to paragraph 5.b of "Industrial Security Manual for Safeguarding Classified Information", the Contracting Officer may modify Contractor's responsibilities for security with respect to any work being performed hereunder within the confines of a military installation. Such modification shall be transmitted to the Contractor by the Contracting Officer by written notice pursuant to the clause of this contract entitled "Changes". If such modification results in an increase or decrease of security costs under this contract, an appropriate increase or decrease of the target cost and fee hereunder shall be negotiated and evidenced by a supplemental agreement to this contract.

PART IX - FACILITIES CONTRACTS

A. As contemplated by paragraph (a) of Clause B.15 of General Provision 1.b, the Facilities Contracts are: AF 33(600)-37254, AF 04(647)-291, AF 33(600)-28587 and NOw 6108-4.

B. As contemplated by said Clause B.15, the Subcontractors, Facilities Contracts and Subcontract Items are as follows:

Subcontractor	Facilities Contract	Subcontract Item
Aerojet-General Corp. Sacramento, Calif.	DA-04-495-ORD-1354 AF 33(038)-29926 AF 33(600)-37850 NOW 6144 U	Ullage Rockets
Aerojet-General Corp. Azusa, California	AF 33(038)-11378 NOWR (F) 2463 (00) NOw 6104 U	
Bell Aerosystems Corp.	AF 33(038)-41504 AF 33(038)-18896	Rocket Engines
Fairchild Camera & Inst. Corp. Defense Products Div. 300 Robbins Lane Lyassett, Long Island N.Y.	AF 33(600)-24973 AF 36(600)-4890	Programmer
Minneapolis Honeywell Corp. 2600 Ridgway Road Minneapolis, Minn.	AF 33(038)-23692	Inertial Reference Package

PART X - GOVERNMENT-FURNISHED PROPERTY

The Government will furnish to the Contractor for use in the performance of this contract the Government-furnished property listed in Exhibit 648B-103, entitled "Government-Furnished Property", dated 28 February 1962, incorporated herein by reference.

PART XI - [illegible]

A. The terms and conditions of this contract are based on the providing to the Contractor of certain facilities. These are identified as specifically as practicable in the Schedule; are of the estimated cost therein listed; and, as determined by the Contracting Officer, may be either furnished to the Contractor directly by the Government, or the Contractor may be authorized to acquire them at Government expense. The parties agree to enter into a separate facilities contract, or to amend an existing facilities contract, as the case may be, under mutually acceptable terms and conditions, at the earliest practicable date. The separate facilities contract, or the amendment to an existing facilities contract shall be in a form prescribed by the appropriate sections of the Air Force Procurement Instruction in effect on the date such facilities contract or amendment is executed. Such facilities shall be provided on a no-charge basis in accordance with the clause of this contract entitled: "Use of Government Facilities On a No-Charge Basis".

B. It is agreed that if such facilities are not provided at the time and to the extent provided in the Schedule, an equitable adjustment shall, upon timely written request of the Contractor, be made in the terms and conditions of this contract to the extent required by the failure to provide such facilities.

C. The facilities referenced in paragraph A above are machine tools, related production equipment, laboratory and testing equipment, furniture and equipment, portable tools and material handling equipment, and machinery and equipment installation costs, at an estimated cost of $4,359,400.00.

PART XII - SEGREGATION OF COSTS AND REPORTS

The Contractor shall segregate all costs incurred in performing the effort required by Items 1, 2, 3 and 4. The Contractor shall maintain separate job orders and submit separate vouchers for the effort required by said Items in a manner and format as agreed by the Contractor and the Contracting Officer. The Contractor shall provide separate Financial Status Reports of Contract (DD Form 1097) required under this contract for each of said items.

PART XIII - RIGHTS IN DATA

The rights obtained by the Government in Subject Data are set forth in the Data clause incorporated in this contract, and nothing elsewhere in this contract or in any documents incorporated by reference in this contract shall be construed as in any way altering such rights.

PART XIV - CONTRACT NUMBER IDENTIFICATION ON DATA

Contractor agrees to mark the number of this contract on all Data delivered hereunder.

PART XV - ADVANCE UNDERSTANDING ON PARTICULAR COST ITEMS

The provisions of ASPR 15-205.1 and 15-205.33 are applicable to reimbursement made or to be made from funds appropriated by the DOD Appropriation Act of 1962 and any other funds hereafter obligated under this contract regardless of the year in which appropriated.

PART XVI - INCORPORATION OF "INDEMNIFICATION FOR UNUSUALLY HAZARDOUS RISKS" CLAUSE

In the event that during the life of this contract there is an "Indemnification for Unusually Hazardous Risks" clause approved for use in this contract, said clause will be incorporated herein upon request of either party hereto.

PART XVII - OVERHEAD RATES

The first overhead period referred to in Clause B.14 of General Provision 1.b shall extend from 25 August 1961 to 31 December 1961; subsequent periods shall be in accordance with the ending date of Contractor's fiscal year. Pending establishment of final overhead rates for any period, the Contractor shall be reimbursed at billing rates acceptable to the Contracting Officer, or his duly authorized representative.

GENERAL PROVISIONS

1. Incorporation of Basic Agreement

a. All of the Clauses of Sections A and D of Basic Agreement No. AF 33(657)-5032, dated 10 January 1962, are incorporated herein by reference and shall apply in the performance of this contract.

b. The following Clauses of Section B of the above-mentioned basic agreement are incorporated herein by reference and shall apply in the performance of this contract, except as modified by paragraph c. below:

B.2	Patent Rights
B.4	Data
B.6	Authorization and Consent
B.11	Ammunition and Explosive Material Safety
B.12	Changes to Make or Buy Program (The referenced make or buy program is set forth in Exhibit 662A-104, entitled "Make or Buy Exhibit", dated 25 October 1961, incorporated herein by reference)
B.13	Safety and Accident Prevention
B.14	Negotiated Overhead Rates
B.15	Use of Government Facilities on a No-Charge Basis
B.17	Notice of Radioactive Materials
B.22	Allowable Cost, Incentive Fee, and Payment (Applicable to Items 1 and 3 only)
B.25	Limitation of Government's Obligation
B.26	Defense Subcontracting Small Business and Labor Surplus Area Program
B.28	Material Inspection and Receiving Report
B.30	Stop Work Order

c. Clause B.22 - Allowable Cost, Incentive Fee, and Payment - is amended by deleting paragraph (i) and substituting the following in lieu thereof:

"(i) The fee payable hereunder for Items 1 and 3 only shall be in accordance with the fee formula set forth in Exhibit "A", attached hereto and made a part hereof. In no event shall the fee be greater than 9%, nor less than 5%, of the target cost; and within these limits such fee shall be subject to adjustment, by reason of increase or decrease of total allowable cost for Items 1 and 3 on account of payments under the assignment required by (f)(i) above, and claims excepted from the release required by (f)(ii) above."

2. Prior Instruments Superseded

This is the definitive contract contemplated by Letter Contract, dated 25 August 1961, and designated Contract AF 04(695)-21 and supersedes said Letter Contract and all Amendments thereto. Any costs incurred or payments made thereunder will be considered to have been made under this definitive contract.

3. Approval of Contract

This contract shall be subject to the written approval of the Secretary or his duly authorized representative and shall not be binding until so approved.

EXHIBIT "A" TO
CONTRACT AF 04(695)-21

INCENTIVE FEE FORMULA

I. GENERAL

A. The purpose of this Exhibit is to state the target cost, cost sharing limits, maximum and minimum fee within the cost sharing limits and the incentive adjustment formula as negotiated under cost-plus-incentive-fee contract AF 04(695)-21. The Contractor's areas of performance which will be measured for incentive application under this contract are:

1. Cost
2. Delivery
3. Performance

II. INCENTIVE FEE LIMITS

A. The target cost, target fee, and target price for Items 1 and 3 are:

Target Cost	[redacted]
Target Fee 7-2/3%	[redacted]
Target Price	[redacted]

B. The incentive fee based on the cost incentive formula is limited to a maximum increase or decrease adjustment of 2/3% of the target cost to the target fee.

C. The incentive fee based upon the delivery incentive formula is limited to a maximum decrease of 1-1/3% of target cost to target fee.

D. The incentive fee based upon the performance incentive formula is limited to a maximum increase or decrease adjustment equal to 2/3% of target cost to the target fee.

E. The total incentive is limited to the specific areas of the Contractor's performance as follows:

NOTE: This Exhibit
consists of 3 pages

Cost Incentive	± 2/3%	of target cost
Delivery Penalty	- 1-1/3%	of target cost
Performance Incentive	± 2/3%	of target cost

Total maximum increase to target fee	+ 1-1/3% of target cost
Total maximum decrease to target fee	- 2-2/3% of target cost

Fee ceiling equal to 9% of target cost

Fee floor equal to 5% of target cost

III. COST INCENTIVE

A. The specific amount of incentive fee applicable to the cost incentive which will be either an increase or decrease to the target fee will be determined on the basis of a cost sharing ceiling of 115% of the target cost and a cost sharing floor of 85% of the target cost.

B. The amount of incentive fee applicable to the cost incentive shall be computed as follows:

Increment of cost reduction or cost overrun	Contractor's percent participation in cost reduction or cost overrun
1st 5% increase or decrease in target cost	2%
2nd 5% increase or decrease in target cost	4%
3rd 5% increase or decrease in target cost	7.34%
Total 15%	

IV. DELIVERY PENALTY

A. The specific penalty fee applicable to the Contractor's inability to meet the required delivery schedule is equal to 1-1/3% of target cost. The maximum reduction to target fee for one delinquent item shall be equal to .1111% of the target cost, or a maximum reduction to target fee equal to 1-1/3% of target cost for 100% delinquency.

B. The Contractor shall deliver Agena D vehicles as required by the contract schedule. If the Contractor fails to meet a delivery schedule, the Contractor's profit (fee) shall be reduced as follows for each delinquent vehicle:

	Period delinquent	Total Amount of Penalty
For each vehicle delinquent	15 days but not more than 21 days	.0222% of target cost
	22 " " " " " 28 "	.0444% " " "
	29 " " " " " 35 "	.0666% " " "
	36 " " " " " 42 "	.0888% " " "
	43 days or more	.1111% " " "

The penalties outlined are not cumulative. The maximum penalty for any delinquent vehicle is .1111% of target cost.

V. PERFORMANCE

A. The specific incentive fee applicable to the Contractor's performance incentive is a total increase or decrease in the target fee equal to 2/3% of the target cost, computed as follows:

1. An Air Force board shall be appointed to rate the Contractor's performance. This board will submit its recommendations to the Contracting Officer, within thirty (30) days after the launch of the last vehicle produced under this contract.

2. The board will use the following criteria to rate the Contractor's performance under this contract:

   a. Group I Criteria - Weighted 50%

      (1) Reliability

      (2) Program adaptability

      (3) Ease of checkout

   b. Group II Criteria - Weighted 50%

      (1) Weight of vehicle

      (2) Ascent performance

3. A total of evaluation points, from 0 to 60 shall be used, with the target established at 30 points.

SSV

Atlas Launches at AMR and PMR

DCG (LtGen Estes)

1. With reference to your letter of 19 Mar 62, I have appointed a Space Launch Survey Team consisting of representatives from the Deputy for Launch Vehicles, Agena Program Directorate, the SSD Test Planning Office, the 6595th and 6555th Aerospace Test Wings, and the Aerospace Corporation. In addition, I have requested a representative from General Dynamics/Astronautics at San Diego, California, and from Lockheed Missiles and Space Company at Sunnyvale, California to assist the Space Launch Survey Team.

2. It is planned that the Space Launch Survey Team will depart 1 Apr for AMR and will then proceed to PMR to look into the following:

a. The organizational arrangements and contractor relationships that relate to Atlas/Agena space launches.

b. The sequence of events that take place from the time the launch vehicles arrives at the launch site until it is launched, to include the Atlas and Agena checkout procedures and test philosophy.

c. The type of range support provided at each location.

d. The type of checkout and launch hardware at each location.

3. After the Survey Team complete their investigations at the launch sites they will return to this complex to analyze and evaluate their findings. I plan on providing you a report of their investigation by the end of April.

SIGNED

O. J. RITLAND
MAJOR GENERAL, USAF
COMMANDER

1 Atch
Cy ltr fr Gen Estes to G[illegible]
Ritland, 19 Mar 62, same subj.

Report dtd May 1962

HEADQUARTERS
OFFICE OF THE DEPUTY COMMANDER AFSC
FOR AEROSPACE SYSTEMS
UNITED STATES AIR FORCE
Air Force Unit Post Office, Los Angeles 45, California

REPLY TO ATTN OF: DCL

19 MAR 1962

SUBJECT: Atlas Launches at AMR and PMR

TO: Major General O. J. Ritland
Commander, Space Systems Division (AFSC)
AF Unit Post Office
Los Angeles 45, California

Dear Ossie

1. One of the major points made by your Launch Analysis Task Force in a recent briefing to me was the impact on pad time and costs attributable to lack of standardization of equipment and procedures. Lack of standardization is conducive not only to excessive costs, but also tends to affect the success of the launching.

2. It appears to me that differences in hardware, procedures and organizational arrangements that relate to Atlas launchings at AMR and PMR may be affecting significantly the degree of success of launchings at these two locations. In fact, some recent data which I have examined indicates a slightly greater percentage of successful launches at AMR than at PMR. In this event, it would appear desirable to achieve, to the extent feasible, a standard way of "doing business" which would be common to the two locations and which would employ the best features of the two current systems of operation.

3. In view of the above, it is requested that you arrange for a comprehensive analysis and evaluation of this area with the following objectives in mind:

a. To review all of the elements, including hardware, procedures and organization, involved in the launch process at AMR and PMR for the purpose of determining significant differences between the two organizations.

b. To analyze and evaluate these differences for the purpose of identifying those for which one of the alternate ways appears to be preferential in terms of the probability of success of the mission.

c. To determine on the basis of this analysis and evaluation whether or not these differences should in any way contribute to a higher level of success or reliability at either one or the other of the two launch sites. (Effects of differences of national range facilities of AMR and PMR should be taken into account in this connection.)

d. To prepare recommendations regarding any standardization between the launch sites in terms of equipment, procedures, etc. which, on a cost/effectiveness basis might appear warranted toward the objective of higher reliability levels and further to prepare recommendations as to any additions in equipment or changes in procedure at the national ranges which would serve these same ends.

4. For some time, a launch analysis task force has been in session to examine means of reducing launch cost and launch pad time. It is possible that the investigations mentioned above might be undertaken as an additional task by this group. In any event, it is of vital importance that whatever group conducts the investigation be so organized as to conduct those efforts in an atmosphere of maximum objectivity. It is requested that you inform me by return memorandum of the general plan of action which you contemplate and the approximate date at which a meaningful study may be completed.

Sincerely,

HOWELL M. ESTES, JR.
Lieutenant General, USAF
Deputy Commander for Aerospace
Systems

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1st Agena D acceptance

MEMORANDUM FOR RECORD

18 April 1962

SUBJECT: Agena D Configuration

1. On 16 Apr 62 LMSC offered the first Agena D to the Air Force for acceptance. During the course of events, from 7 Nov 61 to 16 Apr 62, it was necessary to "evolve" the Agena D structure as delivered. Although the Air Force formally accepted AD-1, with certain deviations delineated on the DD-250 document. It was my personal conviction as Program Director that "we had not fully" attained the objective of a standard vehicle at this point in the development process. Further, that with the planning thus far accomplished by the LMSC Office, we would not very likely attain this goal prior to the delivery of AD-9. I do not feel that this is either necessary or desirable.

2. Accordingly, this date, I formally requested Mr O'Green, LMSC Program Director, to request his staff to evaluate their current planning, in light of my official request, to move up the standard configuration delivery date to AD-6 or earlier. Specifically, I desired to avoid the necessity for any further structural changes under the (-21) contract after the introduction of the following items:

a. Redesign Forward Equipment Rack.

b. Redesign Aft Equipment Rack.

c. Type V Telemetry Module.

d. Mark X Inverter.

Mr O'Green officially accepted my request to undertake the re-evaluation and requested an opportunity to discuss the problem with his staff.

HENRY B. KUCHEMAN, JR
Colonel, USAF
Director, Program 6483
AF Agena D Office

4/25/62
169

MEMO FOR FILE

Subject: LOCKHEED-AIR FORCE MEETING ON AGENA D OPERATIONAL PLAN

Members of AFSSD met with members of LMSC staff on 20 April 1962 in Sunnyvale to discuss the Agena D Operational Plan.

Those in attendance were:

AFSSD	LMSC
Maj. Gen. O. J. Ritland	W. M. Hawkins
Colonel H. E. Evans	R. R. Kearton
Colonel H. B. Kucheman, Jr.	D. J. Gribbon
Lt. Col. E. F. Blum	F. W. O'Green
	J. W. Plummer
	R. D. King

LMSC presented the briefing as to the comparison of various approaches of carrying out the testing aspects of Agena D from manufacturing to launch. This included comparisons with existing "B" methods and various combinations of Building 104/152 testing, as appropriate.

The briefing charts used are attached. These charts include the data presented for discussion, in addition to the LMSC conclusions and recommendations as shown on the final two charts.

Considerable discussion took place on many of the points presented. None of the points made in the briefing charts, as shown here, were considered to be invalid or in question after an explanation, and the Air Force accepted the Lockheed position including the recommendations and conclusions shown. Colonel Evans stated clearly that although considerable effort was being expended in exploring the way in which production flow from manufacturing to launch could be optimized, it was in no way to be construed that the Air Force intended to change the Agena D basic approach as it now exists for the initial production effort. Stated simply, this means Agena Ds are to be manufactured in a standard configuration, checked out, and sold by DD-250 to the Government for storage or use. The effort required to peculiarize an Agena D through either a Lockheed existent program or booster program use would be carried out after completion of the Building 152 DD-250 in Building 104 or at a test base and preferably on a contract other than Agena D.

General Ritland expressed concern over the fact that carrying out this approach required certain duplication of work. This refers to the fact that it is necessary to include two installation spans and two checkout spans when Agena D is produced as a standard vehicle and then modified and checked again to the booster or program configuration. Although LMSC has recognized this fact since the beginning of the program and has pointed it out to the Air Force, General Ritland stated that the extra costs incurred as a result of this effort, in spite of the present or potential savings of the Agena D Program, was not easy to sell to either the secretary level of the Air Force or the GAO. He did agree that the GAO aspect of this could be explained.

Subject: [illegible]-AIR FORCE [illegible] OF AGENA D OPERATIONAL PLAN

LMSC agreed to the partial inefficiencies caused by strict adherence to the Agena D approach. The position taken, however, was that until such time as the present effort had been consummated and the Air Force was indeed receiving standard products from a production line, the whole effort and its total potential gain could be invalidated by resorting to a system in which flexibility was introduced prematurely. It was also agreed that it appears both appropriate and possible to modify the standard concept in order that program peculiars and optionals could be incorporated to make possible a single installation checkout span and thus maximize cost and time savings. It was held firm that the introduction of such an approach must be orderly and carefully planned.

The conclusion of the meeting was an agreement that LMSC should continue its Standard Agena D plan as originally visualized and presently being accomplished. LMSC will, in addition, provide a plan, at an early date, leading to a capability of providing all Agenas required by booster programs in a configuration from Building 152 permitting shipment directly to the base as pad-ready vehicles without the requirement of a Building 104 check.

F. W. O'Green, Director
Agena D Program

FWO:sc

cc: W. M. Hawkins
D. J. Gribbon

[redacted]

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25 April 1962

General B. A. Schriever
Commander
Air Force Systems Command
Andrews Air Force Base
Washington 25, D. C.

Dear Ben

Attached hereto is a second review of the Agena D program as accomplished by Kelly Johnson and myself on the 19th of April. I believe the report is self-explanatory.

With regard to the recommendations, I have already taken action. Specifically:

(1) I have asked the contractor to present a definitive plan for managing the follow-on production phase under the -68 contract. This will include identification of all key personnel that would be associated with the program.

(2) It is my opinion that the follow-on Agena D effort should fall between the management approach for the first twelve and the standardized Air Force contractor relationship under normal production programs. I am certain that if we make too many deviations from the successful program we now have to a GI production program, costs, schedule, and reliability will suffer.

(3) The configuration control problem is a very difficult one but must be clearly established and defined in the follow-on program as eventually established under paragraph 2 above.

(4) It was imperative that the -21 contract with Lockheed be approved by Hq USAF before 30 April 1962. Otherwise, the contract would have had

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AIR FORCE (DPS, Ogden, Ut

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to be re-opened since 60% of the program dollars would have been expended on a letter contract at that time. Through extraordinary effort, Colonel Kucheman and Mr. Silberman walked the contract through the Pentagon and it has now been signed by Mr. Imirie. We now have a CPIF definitive Phase I contract with Lockheed.

(5) I have sent Colonel Battle to Lockheed to satisfy himself that the transition from the standard Agena D to the final version for his program, including optional and peculiar equipment, is under control. At the same time, I emphasized to Colonel Evans and Colonel Battle that they must meet the June 28th launch date plus the Agena D launch schedule which follows. It is my opinion that the final proof of the Agena D effort will be shown through Colonel Battle's program.

The R&D effort so far on the Agena D is certainly an outstanding accomplishment. As of this moment, eight (8) months have been cut off the original schedule, the hardware is clean, costs to date are in accordance with the contract schedule, and the checkout time appears to be reduced. If it is possible, I would encourage you to spend a few hours at Lockheed to view this progress.

Sincerely

SIGNED

O. J. RITLAND
Major General, USAF
Commander

1 Atch
Ltr, 25 Apr 62, to Comdr AFSC,
Rept of 2d Review of Agena D Pgm,
Orig and 1cc (SSG-88)

Copy to: General Estes
Colonel Kucheman

	ORIGINATOR				
OFFICE SYMBOL					
NAME (SIGNATURE)					
DATE					

DCAS FORM 11 AUG 61 COORDINATION SHEET

CONFIDENTIAL

AIR FORCE (DPS, Ogden, Utah

CO~~NFIDENTI~~AL

25 April 1962

General B. A. Schriever
Commander
Air Force Systems Command
Andrews Air Force Base
Washington 25, D. C.

1180

Dear General Schriever

Reference: a. Letter dated 27 Feb 62 to General Schriever from Major General O. J. Ritland and Mr. Clarence L. Johnson, re first review of Agena D program.

b. TWX, SCGN 7-3-12 dated 7 Mar 62 for SSG, General Ritland, Info to Mr. C. L. Johnson.

On 19 April 1962, Major General O. J. Ritland and Clarence L. Johnson visited the Lockheed Missiles and Space Company at Sunnyvale, California, as per your directive, to make a second review of the status of the Agena D program. The following comments apply to our investigation made on that day.

1. The project operation is running very smoothly, with excellent relationships between the Air Force and the Contractor. It was stated by several key individuals that their relationships on this project were the best of any they had encountered.

2. Morale on the project is good.

3. The cost control methods, which are similar to those used by Mr. Johnson in the past, appear to be working well, as the project costs are tracking nicely within the expected dollar expenditures which have been set up contractually.

4. The first Agena D has been accepted by the Air Force on schedule. Excellent cooperation was demonstrated by the Contractor and the Air Force in inspecting the bird and correcting deficiencies found. While all equipment elements in this unit have not passed their formalized qualification tests, this will have been accomplished prior to the launch

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UPON COMPLETION OF PROGRAM

~~CONFIDENTI~~AL

date and, in general, these equipment items have passed their tests but the formal reports have not been written.

5. The recommendations made in the referenced letter have been carried out well. On our last trip, we were not given the proper information on the fuel tank redesign regarding skin thickness and tolerance margins. This situation was clarified, and we now have no differences with the Contractor regarding the fuel tank redesign on the Agena D.

6. Recommendation #6 of the referenced letter cannot be complied with, in spite of a good effort by the Contractor to do so. There will be a strength improvement on the 9th Agena D by making use of the access panels to the equipment as structural load-carrying members. This condition came about by increased load requirements for several packages, primarily 621-A and 483-A. There is no structural deficiency on the first eight units for Colonel Battle's projects.

MAJOR PROBLEMS:

The major problems encountered during our study were the following:

1. While the agreed fifteen (15) operating points have been scrupulously observed by both parties for the design and construction of the first twelve (12) Agena D's to this date, there seems to be a definite plan afoot to change these operating procedures to the normal type of industry-Air Force operation on the follow-on contract for thirty-nine (39) units. An error or a lack of understanding in drawing procedures on the first twelve (12) units has led to a complete redrawing program now going forward at the Lockheed-California Company, taking the 350 drawings used to build the first twelve (12) birds and converting them to 1300 drawings for the follow-on contract. The major cause of the redrawing is the fact that the initial drawings did not completely define a given part on one drawing, it being necessary to have several different drawings in order to get all the information required to build a part. This is certainly an untenable situation but, in our view, it could have been corrected much more simply than by a complete redrawing program, involving a cost of some $350,000. We were told that the usual configuration control would be re-instituted, but that the processes and procedures developed for the first twelve (12) birds, as well as the specifications for detail parts, would be maintained. We fear that a change of management will be made at the same time, with an attendant

loss of top level experience, which always results in higher costs, delays, and various other types of major problems.

2. We are concerned that, while the first standard Agena D has been completed on schedule, there have not been sufficient preparations made in building #104 for the incorporation of peculiar and optional equipment and for checkout and launch. We encountered a much lower level of drive and understanding of the problem in the checkout area than was demonstrated in the first part of the program, under Mr. Fred O'Green. We were given conflicting data as to when the checkout area would be ready and what schedule would be obtained for shipment to the launch area. These problems were discussed with Messrs. Hawkins, Kearton, and O'Green, and Colonel Kucheman.

3. While many improvements have been made and good action has been taken to improve the reliability of the equipment items, there is some question on the accuracy of the data shown us regarding the hydraulic system and the inverter. These items were discussed in detail with those directly connected with the project.

RECOMMENDATIONS:

1. Contractor should present alternative plans on how the follow-on group of Agena D's is to be constructed and, specifically, what people will manage what parts of the program. It is hard to see that a system which will apparently reach a production rate of four (4) birds per month needs to be completely revised to go to five (5).

2. Clarification is needed as to the Air Force position on whether or not the original fifteen (15) rules used to develop the first twelve (12) Agena D's are to be continued into the production phases for more birds. This was the understanding of the writers, but apparently instructions have gone out through normal Air Force channels negating this approach.

3. The configuration control problem continues to be a nasty one but it can be obtained, no doubt, within the management structure currently existing by delegation of substantially more power to Colonel Kucheman.

4. While there has been no time when funding has not been in advance of requirements, it has been on a marginal basis and, if this

continues in the future, it may prevent the Contractor from placing orders for equipment and materials in an expeditious manner.

5. LMSC must provide better supervision and direction to the program when the birds are transferred from the cognizance of one of their internal groups to another, to avoid the loss of valuable time.

6. The Contractor, the Project Officer, and the AFPR are to be commended for their performance to this point, which indicates that the program is on schedule, the first bird is fifty (50) pounds underweight, and the costs are well in hand. Checkout times for AD-1, as a prototype, are running from 1/2 to 1/3 those of the current Agena B's; so, obviously, a marked improvement has been made in the design of the bird.

7. A complete schedule and plan for a launch of AD-1 on 28 June should be prepared immediately and executed.

Sincerely

Major General O. J. Ritland

Clarence L Johnson

Clarence L. Johnson

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APR 27 1962

SSH

Attendance at Mockup, CTCI and DEI Boards

SSS

1. In reply to your letter of 18 April 1962, subject as above, SSH ([illegible]) has the following comments to provide regarding SSH ([illegible]) ([illegible]) Agena experiences in the area of Mockup CTCI and DEI Boards.

2. In early 1959 it was originally planned to have a formal complete mockup inspection of the WS117L system. A proposal by LMSC set the figure at 3 million dollars for this inspection. Although this figure could have been reduced, plans were dropped for any formal mockup.

3. There have never been any classical mockup CTCI or DEI functions connected with the Agena program. In their place have been substituted three general proceedings and their composition and formality have varied from time to time.

a. Technical Direction Meetings: These are small meetings concerned with a single subsystem (for example, guidance and control) held about every six weeks to review current engineering, tests, future plans, failed equipment reports, and problem areas. These meetings involve about two-three SSD cognizant engineers and approximately ten LMSC engineers who are not necessarily present during the entire meeting. Informal action items are kept which may later become the subject of official correspondence.

b. Design or Configuration Reviews: These may be on a new system, piece of equipment, or on a new model vehicle. Again these are small meetings involving six-seven SSD engineers and ten to twenty LMSC engineers, depending on the scope of the subject. Depending upon the subject, the discussion may be purely informative or it may involve compromise or redirection of effort.

c. Acceptance Meetings: These are held at DD 250 sign-off and involve SSD subsystem and program office engineers, the AFPR representatives and their LMSC counterparts. In the event the program is supported by Aerospace, their engineers are also present. SSD attendance runs approximately six-eight, Aerospace two-five, AFPR one-two, and LMSC twenty-forty. Log books are examined and informal questions are posed during the morning session. In the afternoon period, a formal meeting is held and all aspects of the vehicle are examined to determine the acceptance status of the vehicles. The results are entries to the DD 250 and engineering dispositions to be submitted by LMSC on a prearranged date to the program office.

[redacted]

In all of the above meetings, [illegible] the [illegible] personnel participate so good continuity is provided to assure that action is carried out or applied to other comparable SSD programs.

4. The Agena D mockup meeting approached more closely the standard concept of a mockup inspection. This was necessitated by the policy of allowing only six Air Force personnel access to the development area, as well as only those LMSC personnel directly concerned with the program. A wood and metal mockup was provided as well as copies of the briefing charts. Each subsystem was formally presented. All using and potential using programs, including NASA, were invited to attend. The usual formal presentation was followed by a question and answer session.

5. In conclusion, it should be noted that the country fair atmosphere of the mockup and CTCI inspections of the aircraft era when all who came were experts on cockpit and maintenance aspects, has reverted to a rather close knit group who are directly associated and cognizant of the program objectives. This change has developed due to the still experimental nature of space projects and the limited blue suit operations associated with them.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

SSHA

Lt Col Smith/VM
26Apr62

30 APR 1962 172

SSH

SSH (Agena D) Objectives for FY 63

SSGE (Col Berg)

1. In reply to your letter dated 10 April 62 requesting the objectives of the Agena D program for FY 63, I am happy to provide a list of what we in the Agena Directorate feel should be accomplished.

a. Establish an annual line item in the budget.

b. Establish an SSD policy requiring all Agena B using program offices to submit vehicle modifications through the Agena Directorate to better maintain a standard, versatile Agena vehicle.

c. With the accomplishment of (a) above, establish a modest product improvement effort to improve reliability, mission adaptability, serviceability, and producibility of the production Agena D.

d. Exploit to the greatest degree possible the use of available automatic checkout equipment to produce the basic Agena D on a production line schedule.

e. Study and plan for standardization of existing and future Agena Aerospace Ground Equipment at all sites.

f. In conjunction with (b) above, establish the rudiments of a system for configuration control to include detailed specifications and other baseline material.

2. It is recognized that many of these items are quite minor when compared to those of a major program. Therefore, if the list is to be culled, it is recommended that items (a) and (c) be considered the most important.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

MBOL	ORIGINATOR SSHA				
GNATURE)	Lt Col Smith/lt				
	27 April 1962				

11 COORDINATION SHEET

61

AIR FORCE IDPS, Ogden, Utah

[redacted]

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[redacted]

1. Contract AF 04(695)-65 is for production of Agena D satellite vehicles, and spare parts, and special equipment. The estimated dollar value of the program for FY-65 is $70,000,000. It is contemplated that this contract will be of the FPR type when definitized. The contractor will require the use of existing government furnished industrial facilities. It is the opinion of the Procuring Contracting Officer that this program is applicable to 'make or buy' as contemplated by the referenced AFPI Supplement No. 2.

2. It is requested that a Make or Buy Review Board be established by the Chief, Procurement and Production Office, to review the contractor's 'make or buy' program.

3. Action to reach agreement on the 'make or buy' exhibit is urgent in order to definitize a delinquent letter contract. In the event your office cannot designate a board at an early date, request advice to that effect and some other arrangements will be made to comply with regulations with regard to 'make or buy'.

SIGNED

EUGENE S. SILBERMAN
Procuring Contracting Officer
Program 648D

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[redacted]

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[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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[redacted] [redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

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SSHD

MAY 1 4 1962

Agena D Optional Equipment

Lockheed Missiles & Space Company
Attn: Mr. F. W. O'Green
Department 68-01
P. O. Box 504
Sunnyvale, California

1. It is the intent of this letter to clarify the policy regarding Agena D procurement of Optional Equipment. As firm requirements are established by using program offices, authority to procure these items will be provided by way of the follow-on -68 contract, to enable LMSC to take advantage of lot procurement whenever possible.

2. Attached is a list of Agena D optionals to be procured by the Agena D office. This list includes estimated lead-time and costs as provided by your program office.

3. In order to establish stability in this procurement activity, it is requested that no change be made to the attached list without prior notification of the Air Force Program Director.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director
for Agena

1 Atch
Agena D Optionals to
be Procured by SSHD

Major Hogerle/dc

176

MAY 1 4 1962

SSHD

Underfunded Contracts

SSCM (LtCol Warren)

1. Reference SSCM letter, same subject, dated 10 May 1962.

2. The 648B Program is presently funded under two contracts. The -21 contract is the basic definitized contract and the -68 contract is the follow-on letter contract. Both contracts are identified on Attachment 2 of the referenced document as being underfunded and will be explained separately.

3. The basic -21 contract is reported as underfunded by $50,000 in November 1961.

a. The -21 letter contract was issued in August 1961 with original funding obtained from Programs 660A, 621A, and 698AL. The contract was adequately funded by utilizing program funds until mid-November 1961.

b. Subsequent to mid-November, the Agena D program was placed on an accelerated schedule in conformance with instructions received from the Office of the Secretary of the Air Force and Hq USAF. Since that date, there have been two occasions wherein the contractor's commitments approached the Air Force obligations. A personal contact between the Program Director and the Lockheed Agena D Program Office, this date, confirmed our recollection that at no time has the contractor's commitments exceed Air Force obligations. The two occasions wherein the contractor's commitments approached moneys on-contract were due to:

(1) In the first instance, failure of Hq USAF to issue a covering B/A in sufficient time to place the moneys on contract any sooner.

(2). In the second instance, an administrative ruling by SSK which prohibited SSHD from obligating more than 60% of appropriated funds while on a letter contract.

On both occasions, however, we were able to apply the necessary funds to the contract prior to the fund exhaustion date. At the present time, 28.6M have been obligated which should fund the -21 contract through 24 May. A Purchase Request is being hand-carried through channels which will place an additional 2.1M on contract and extend the fund exhaustion date until approximately 10 June.

c. On 30 Apr 1962, the signed definitized -21 contract was delivered to LMSC and funds initiated to fund the contractor through FY-62. These funds have not been committed due to Hq USAF redirection of funding policy. The most recent instructions received from Hq USAF have been relayed to Colonel Wogan, your office. These instructions have the effect of removing the funding flexibility from the Program Office at this time. Until further funding guidance and authorization are received from Hq AFSC, there is nothing that the Program Office can do toward relieving a potential underfunding situation, let alone fund on a quarterly basis.

d. The follow-on -63 contract is reported as underfunded by $552,000 in December 1961.

[redacted]

5. Reference is made to Paragraph 1.a. of Hq SSD letter subject, "Presentation by Colonel Phillips on Underfunding on Contracts," dated 7 May 1962. The policy reiterated by General Greer is well known to the undersigned and has been scrupulously followed. With the administrative delays induced by higher echelons of command and by incremental fund techniques, only by effort far

beyond what would normally be expected has it been possible to adhere to this policy or to the program ground rules of the accelerated Agena D. Both LMSC and the Air Force officially recognize that to date we have accomplished the program objective of 'timely funding' and I would like to enjoin your continued support to insure that we complete the contract without the necessity of blemishing this record.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
Systems Program Director
for Agena

197

445

15 May 1962

MEMORANDUM FOR RECORD

SUBJECT: Modernization of Industrial Facilities Bell Aerosystems
Company

1. On this date, a conference was conducted to determine the necessary and proper action to be taken to allocate funds to Bell Aerosystems Company for the modernization of data acquisition and reduction facilities used in the production and test of Agena D rocket engine XLR81-BA-9 (Bell Model 8096). In attendance were:

Colonel Henry B. Kucheman, Jr.
System Program Director for Agena (SSH)

Colonel Joseph L. Campbell
Director of Civil Engineering (SSN)

Colonel Joseph O. Wogen
SSD Comptroller (SSC)

LtCol Robert K. LeBeck
Chief, Astro Vehicle Division - Agena - (SSHAA)

It was concluded that the objectives of the modernization program were in conformance with DOD policy and would ultimately result in a savings to the Air Force. Additionally it was established that the project could be funded from moneys under the control of the SSD Comptroller, Colonel Wogen. Both Colonel Kucheman and Colonel Campbell agreed that the project should be approved provided Hq AFSC/USAF approved Colonel Wogen's method of funding.

2. For the record, Colonel Kucheman explained that from the long term point of view, the overall benefit to be derived from the modernization of these facilities and the impact on the overall Agena program were to the best interests of the Air Force and should be pursued. The information received from LMSC on 15 May 62, see attached Memorandum for Record, same subject dated 15 May 62, was furnished to Colonel Campbell and Colonel Wogen. Additionally, it was pointed out that in

the preparation of the Facility Annex for the Agena D Program Plan, no moneys were provisioned to fund any sub-contractors of LMSC for any purpose. In recognition of this fact, it was stated that no moneys had been provided to the Agena D Program office which were originally intended to underwrite the subject project. In order to overcome this deficiency, it would be necessary to augment the Agena D program office budget by that amount of money necessary to fund Bell. Detail analysis of the funding reveal that a cost saving of $284,000 had been effected during the negotiation of the Agena D Facility Contract and these moneys could be applied together with $129,000 to be derived from funds under Colonel Wogen's control, thereby providing the $413,000 necessary to finance the project.

3. The following additional information was discussed:

a. Bell alleges that it did indeed negotiate a lower engine price based on their assurance by the USAF that the modernization facilities in question would be furnished. However, no explicit recognition of this factor was evident in the Agena D engine negotiations.

b. The negotiation on the part of Bell Aerosystem Company to gain these facilities was done separate and apart from LMSC facilitization.

ROBERT K. LE BECK
Lt Colonel, USAF
Chief, Astro Vehicle Division

1 Atch
Memo for Record same
subj dtd 15 May 62

Cy to:

SSH
SSN
SSC
SSHA

SSH

Technical Support Contract

SSHD (LtCol Blum)

1. One of the basic philosophies of the Agena D Program which we are currently implementing is the segregating of the production effort for the 39 vehicles (-68 contract) from the technical support and component improvement. The -68 contract is well under way. Now is the time to begin work on the support contract in order that the contract can be definitized in an orderly manner.

2. It is requested that you formulate a work statement for the technical support contract in order that we can request LMSC for a proposal in the near future. Formalizing that work statement will also aid us in determining the organization relationship internally and with LMSC.

3. It is desired that you provide the above work statement no later than 31 May 1962.

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

ColFletcher/dc

JOINT MESSAGEFORM

SECURITY CLASSIFICATION

~~CONFIDENTIAL~~ 181

SPACE BELOW RESERVED FOR COMMUNICATION CENTER

PRECEDENCE		TYPE MSG (Check) BOOK	MULTI	SINGLE	ACCOUNTING SYMBOL	ORIG. OR REFERS TO	CLASSIFICATION OF REFERENCE
ACTION	Routine			--		SCCBB 29-5-141	UNCLAS
INFO	Routine						

FROM:

SSD LCSA CALIF

TO:

AFSC ANDREWS AFB MD

DOWNGRADED AT 3 YEAR INTERVALS
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~CONFIDENTIAL~~/SSH-1-6-4

ACTION SCCB; INFO SCGN. REF AFSC MESSAGE SCCBB-29-5-141 DTD 29 MAY AND USAF MESSAGE AFSSV-EQ-90915 DTD 5 JAN. COPIES OF THE ABOVE CITED HQ USAF MESSAGE CONTAINED IN REPORT ON AGENA D CONTRACT STATUS DATED 18 MAY 62 RECENTLY FURNISHED YOUR HQ. THIS MESSAGE IN FOUR PARTS. PART I. THE FUNDING GUIDANCE IN THE REFERENCED AFSC MESSAGE IS ACKNOWLEDGED AND WILL BE FOLLOWED IN SUBMISSION OF FUTURE FISCAL REQUIREMENTS FOR PROGRAM 648B. IT SHOULD BE POINTED OUT THAT ALL FUNDS ORIGINALLY ALLOCATED TO PROGRAM 648B BY HQ USAF WERE REIMBURSABLE FUNDS. AS OF 31 MAY BY A SERIES OF

SPECIAL INSTRUCTIONS

SSH-945

DATE	TIME
1	
MONTH	YEAR
June	62

SYMBOL

SSH

TYPED NAME AND TITLE (Signature, if required)

Col Buchanan

PHONE

PAGE NR.	NR. OF PAGES
1	7

SECURITY CLASSIFICATION

~~CONFIDENTIAL~~

RELEASER

SIGNATURE

TYPED (or stamped) NAME AND TITLE

DD FORM 1 MAY 55 173 REPLACES DD FORM 173, 1 OCT 49, WHICH WILL BE USED UNTIL EXHAUSTED

JOINT MESSAGEFORM - CONTINUATION SHEET

SECURITY CLASSIFICATION ~~CONFIDENTIAL~~

LOSA CALIF

ACTIONS, HQ USAF HAS CONVERTED EMERGENCY FUNDS, REPROGRAMMED FUNDS AND PROGRAM 632A FUNDS TO COVER THE AGENA D DEVELOPMENT, ENGINEERING, AND INDUSTRIAL FACILITIES REQUIREMENTS. AS OF THIS DATE A TOTAL OF $35,396,734 HAS BEEN IDENTIFIED. FY 62 REIMBURSABLE FUNDS TOTALLING [illegible] STILL REMAIN TO COMPLETE THE FY 62 FISCAL REQUIREMENT. THESE FUNDS WERE ALLOCATED BY HQ USAF TO COVER THE LONG LEAD TIME REQUIREMENTS FOR COMPONENTS AND TO ESTABLISH INITIAL PIPELINE FLOW IN SUPPORT OF THE PRODUCTION CONTRACT. PART II. THE AGENA D PROGRAM OFFICE HAS BEEN DIRECTED (REF CITED USAF MESSAGE) AS FOLLOWS: QUOTE PROCUREMENT OF A MAXIMUM QUANTITY OF 39 VEHICLES SCHEDULED AT A RATE NOT TO EXCEED FOUR PER MONTH UNDER THE FOLLOW-ON CONTRACT IS APPROVED. FUNDING NECESSARY FOR LONG LEAD TIME ITEMS WILL BE WITH FY 62 FUNDS. CONTRACTOR COMMITMENTS WILL BE HELD TO A MINIMUM CONSISTENT WITH PROTECTING CONTRACT DELIVERY SCHEDULES. UNQUOTE. THE CONTRACTOR"S REQUIREMENT FOR FY 62 FUNDS TO PROTECT THE FOUR VEHICLE PER MONTH

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DD FORM MAY 55 173-1

[illegible] - [illegible] | ~~[illegible]~~

[illegible] CALL

RODUCTION RATE IS ESTABLISHED AS [illegible]. THESE FUNDS AVE AND ARE BEING EXPENDED TO MAKE THE MOST CONOMICAL LOT BUYS OF LONG LEAD TIME COMPONENT EMS WHICH ARE NECESSARY TO SUSTAIN THE ESTABLISHED RODUCTION RATE AND PRODUCTION SCHEDULE. SUCH HINGS AS THE BELL 8096 ROCKET ENGINE, THE INNEAPOLIS HONEYWELL IRP, THE BELL VELOCITY ETER, THE BARNES HORIZON SENSOR, AND OTHERS, HAVE EEN PLACED ON SUBCONTRACT IN ORDER TO INITIATE THE IPELINE FLOW. LMSC HAS BEEN INSTRUCTED THAT THE RO[illegible]CTION CONTRACT IS TO BE A FIXED PRICE CONTRACT. F NECESSITY, LMSC HAS GONE TO THEIR SUBCONTRACTORS ND VENDOR SUPPLIERS ON FIXED PRICE CONTRACTS TO HE MAXIMUM DEGREE FEASIBLE, ESTABLISHING A ELIVERY RATE WHICH IS COMPATIBLE WITH THE EQUIRED VEHICLE DELIVERY RATE OF FOUR VEHICLES PER ONTH. THE LOCKHEED COST QUOTE FOR THE INITIAL RODUCTION LOT OF 39 VEHICLES IS SCHEDULED TO BE RESENTED TO THIS HQ NO LATER THAN 15 JUN 62. FROM HE FOREGOING, IT IS OBVIOUS THAT ANY VACILLATION ON HE PART OF THE AIR FORCE IN ESTABLISHING EITHER THE

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FORM MAY 55 173-1

SSD LOSA CALIF

LOT SIZE OR THE DELIVERY RATE FOR THE PRODUCTION CONTRACT WILL NECESSITATE A CHANGE IN THE BASIS OF THE FIXED PRICE QUOTE. THIS IN TURN WILL DELAY THE PLANNED PROGRAM. IT SHOULD BE NOTED THAT IN THE INTERVENING PERIOD FROM 5 JAN TO DATE, THERE HAVE BEEN SLIPPAGES IN SEVERAL PROGRAMS AND ADDITIONS TO PROGRAM 622A. THE CURRENT FY 63 END POSITION, ASSUMING A PRODUCTION RATE OF FOUR VEHICLES PER MONTH, WOULD BE AN EXCESS OF EIGHT VEHICLES. THE CURRENT SCHEDULE FOR DELIVERY OF VEHICLES TO PROGRAMS IS SHOWN ON PAGE 48 OF THE AGENA D STATUS BRIEFING PRESENTED TO YOUR HQ ON 1MAY. COPIES OF THE BRIEFING ARE AVAILABLE IN SCCN. PART III. REF PART V OF REFERENCED AFSC MESSAGE. THE AGENA D PROGRAM HAS BEEN PROVIDED 21.5M OF 57X3600 FUNDS AS A FY 62 LINE ITEM FOR THE DESIGN, DEVELOPMENT, TEST AND QUALIFICATION OF THE AGENA D VEHICLE. ADDITIONALLY, 3.296M HAVE BEEN PROVIDED FROM PROGRAM 622A TO ESTABLISH THE INDUSTRIAL FACILITY TO SUSTAIN A PRODUCTION RATE OF FIVE VEHICLES PER MONTH. FY 62 FUNDS TOTALLING 10.5M HAVE BEEN

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PROVIDED FROM PROGRAM 622A TO COVER THE COST OF INITIAL DELIVERIES OF THE 12 PROTOTYPE FLIGHT VEHICLES. THE REMAINING FUND REQUIREMENT OF 7.8M HAS BEEN REQUESTED AS A FY 63 AGENA D LINE ITEM. THE COMPLETE FUNDING REQUIREMENT FOR THE AGENA D PROGRAM FOR FY 62 AND FY 63 IS CONTAINED IN OUR MESSAGE SSH-18-5-26 DATED 7 MAY 62. BASED ON THE CURRENTLY APPROVED AFSSD LAUNCH SCHEDULE, AGENA D REQUIREMENTS AT THE TIME OF BUDGET SUBMISSION BY THIS DIVISION INDICATE THAT 83.2M HAVE BEEN REQUESTED AND JUSTIFIED FOR FY 63. DURING FY 62 NO FUNDS WERE PROGRAMMED BY THE USING PROGRAMS TO SUPPORT THE AGENA D DEVELOPMENT. SHOULD YOUR HQ DIRECT THAT THE 13.0M OF REIMBURSABLE FUNDS BE REPLACED BY 57X3600 PROGRAM DERIVED FUNDS DURING FY 62, IT WILL BE NECESSARY TO INCREASE AFSSD PROGRAM FUNDS BY THIS AMOUNT. PART IV. FROM THE OUTSET OF THE AGENA D PROGRAM THIS DIVISION HAS SOUGHT TO PROFIT FROM THE EXPERIENCE GAINED IN THE PROCUREMENT OF AGENA B, THOR AND ATLAS SPACE BOOSTERS. ONE OF THE CARDINAL PRINCIPLES IN ESTABLISHING THE BASIS OF THE

[illegible]

PROD. [illegible] CONTRACT [illegible] TO [illegible] THE [illegible] OF [illegible] AND LOT SIZE [illegible] CONSIDERING THE CONTRACTOR. A THOROUGH EVALUATION OF FIRM REQUIREMENTS WAS MADE AT THE REQUEST OF HQ USAF. THIS INFORMATION FORMED THE BASIS FOR THE DIRECTION CONTAINED IN THE 5 JAN HQ USAF MESSAGE. SHOULD IT BE DEEMED APPROPRIATE, THAT THE REQUIREMENTS CITED IN THIS DIRECTIVE BE CHANGED TO CONFORM TO YOUR FUNDING GUIDANCE, THE PREVIOUSLY SUBMITTED INFORMATION CAN BE UP DATED AND A NEW APPRAISAL MADE OF THE PRODUCTION RATE AND LOT SIZE WHICH SHOULD BE CONTRACTED UNDER THE FY 63 PROGRAM. IT SHOULD BE POINTED OUT THAT ONE OF THE STRONGEST ARGUMENTS FOR THE STANDARD AGENA D CONCEPT IS BEING NEGATED BY THE FUNDING GUIDANCE CITED IN YOUR MESSAGE, NAMELY, THE ABILITY TO ASSIGN AND REASSIGN ANY GIVEN AGENA D VEHICLE THROUGHOUT THE PROCUREMENT AND PRODUCTION CYCLE. IN ALL PLANNING TO DATE, IT WAS INTENDED THAT A SMALL RESERVE OF UNASSIGNED VEHICLES BE CREATED TO FACILITATE THIS PROCESS. IF YOUR FUNDING GUIDANCE MUST LITERALLY BE APPLIED TO

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[illegible]-COL [illegible]

LOSA CALIF

AGENA D PROCUREMENT ALL FLEXIBILITY WILL BE REMOVED, THE CURRENT FIXED PRICE APPROACH TO CONTRACTING WILL HAVE TO BE DRASTICALLY ALTERED IF NOT ABANDONED. IT SHOULD BE ANTICIPATED THAT ANY STRETCH OUT IN DELIVERY SCHEDULE WILL INCREASE COST. THE EXACT IMPACT OF SUCH AN ACTION WILL HAVE TO BE CAREFULLY EVALUATED BEFORE A FIRM RECOMMENDATION CAN BE MADE. IT IS ESTIMATED SUCH A REEXAMINATION WILL NOT BE AVAILABLE PRIOR TO 15 JUL 62. IN VIEW OF THE FOREGOING, IT IS STRONGLY RECOMMENDED THAT YOUR HQ EXERT EVERY POSSIBLE PRESSURE ON HQ USAF TO MODIFY THE INFLEXIBLE FUNDING GUIDANCE AND PERMIT THIS DIVISION TO ESTABLISH A STABLE FIXED PRICE CONTRACT WITH A SPECIFIED DELIVERY RATE AND LOT BUY IN SUPPORT OF VALIDATED REQUIREMENTS.

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PRECEDENCE		TYPE MSG	ACCOUNTING SYMBOL	ORIG. OR REFERS TO	CLASSIFICATION OF REFERENCE
ACTION	Routine				
INFO	Routine	SINGLE X	42	SSH-1-6-4	Conf

FROM:

SSD LOSA CALIF

TO:

AFSC ANDREWS AFB MD

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~SECRET~~/SSH-2-6-7

ACTION SCCB; INFO SCGN. REFERENCE MESSAGE SSH-1-6-4 WHICH WAS IN RESPONSE TO AFSC MESSAGE SCCBB-29-5-141. THIS MESSAGE IS FOLLOW-UP TO SSH INITIAL REPLY AND IS IN FOUR PARTS. PART I. THE FUNDING GUIDANCE IN THE REFERENCED AFSC MESSAGE NEGATES THE SUBMISSION OF FY-63 FISCAL REQUIREMENTS FOR PROGRAM 648B AS SUBMITTED. REFERENCE REIMBURSABLE FUND REQUIREMENT FOR 648B - AGENA D DATED 2 APR 62 (SSH-1)(S) AND FOLLOW-UP SSH MESSAGE SSH-18-5-26. THESE FUNDING REQUIREMENTS WERE BASED ON USING PROGRAM REIMBURSEMENT TO THE AGENA D AT TIME OF VEHICLE

SPECIAL INSTRUCTIONS

DATE	TIME
2	
MONTH	YEAR
Jun	62

WRITER

SYMBOL: SSH

~~CONFIDENTIAL~~

TYPED NAME AND TITLE (Signature, if required): Maj Hegerle

PHONE: RED 3911

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RELEASER

SIGNATURE

TYPED (or stamped) NAME AND TITLE

HENRY B. KUCHEMAN, JR.
Colonel, USAF
Systems Program Director for Agena

SSH-950

DD FORM 1 MAY 55 173 REPLACES DD FORM 173, 1 OCT 49, WHICH WILL BE USED UNTIL EXHAUSTED

JOINT MESSAGEFORM - CONTINUATION SHEET

SECURITY CLASSIFICATION [illegible]

CONFIDENTIAL

FROM

SS LOSA CALIF

825

DELIVERY TO THE USING PROGRAM. THE PRESENT AFSC FUNDING GUIDANCE REQUIRING USING PROGRAM FUNDS AT TIME OF PROCUREMENT WILL REQUIRE RESUBMISSION OF FUNDING REQUIREMENTS FOR FY-63. THE PROCUREMENT LEAD TIME FOR THE AGENA D IS 12 MONTHS TO ON DOCK DELIVERY TO THE USING PROGRAMS FOR THEIR PROGRAM PECULIAR INSTALLATION, CHECKOUT AND LAUNCH. BACK DATING THE CURRENT SSD VEHICLE REQUIREMENT DATES BY 12 MONTHS PROVIDES THE FY THAT PROGRAM DERIVED FUNDS ARE REQUIRED. PART II. AS INDICATED IN PARTIII OF

[redacted]

CF 7.8M

VEHICLES. THE FY-63 FUNDING REQUIREMENT TO COMPLETE PROCUREMENT OF THESE 12 VEHICLES WILL BE PROGRAM 622A DERIVED FUNDS. HQ AFSC DIRECTION THAT THE 13M OF FY-62 REIMBURSABLE FUNDS BE REPLACED BY 57X3600 PROGRAM DERIVED FUNDS DURING FY-62 REQUIRES INCREASES TO FY-62 AFSSD PROGRAM FUNDS. STARTING WITH THE 13TH VEHICLE OR FIRST PRODUCTION AGENA D THE LATEST SSD VEHICLE REQUIREMENT SUMMARY DATED

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SSH	2	4	[illegible]	MJ

[illegible]

CONFIDENTIAL

SSD [illegible]

21 MAY 62 PROVIDED THE FOLLOWING BREAKOUT BY PROGRAM FOR THE FIRST TEN PRODUCTION VEHICLES AT

[redacted]

BY PROGRAM BASED ON THE ABOVE SSD VEHICLE REQUIREMENT SUMMARY AND 12 MONTH LEAD TIME PROVIDES THE

[redacted]

AIR FORCE PROGRAMS AND 5.2 ARPA ([illegible]). THIS TOTAL OF 44 VEHICLES PLUS THE 10 VEHICLES PROCURED WITH FY-62 FUNDS TOTALS A 54 PRODUCTION VEHICLE REQUIREMENT AGAINST THE CURRENT 39 VEHICLE BUY. THIS DIFFERENCE OF 15 VEHICLES REPRESENTS FY-63

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SSH	3	4		MJH

DD FORM MAY 55 173-1

CONFIDENTIAL

JOINT MESSAGEFORM - CONTINUATION SHEET

SECURITY CLASSIFICATION

FROM

[illegible]

~~CONFIDENTIAL~~

5/0

FUNDING REQUIREMENTS IN SUPPORT OF LONG LEAD PROCUREMENT TO PROTECT FY-64 REQUIREMENTS. THESE TOTALS DO NOT INCLUDE CONTEMPLATED (NOT FIRM) NASA REQUIREMENTS, OR PLANNED AIR FORCE PROGRAM REQUIREMENTS. PART IV. TOTAL VEHICLE REQUIREMENTS AS REFLECTED IN SSD REQUIREMENTS SUMMARY REFERENCED ABOVE:

FY-62 FY-63

A M J J A S O N D J F M A M J

1 1 2 2 2 3 2 3 2 3 4 4 3 5 3

FY-64

J A S O N D J F M A M J

3 3 3 3 3 1 3 2 2 1 1 2

THIS TOTAL OF 66 VEHICLES REFLECTS THE 12 PROTOTYPE FLIGHT VEHICLES AND THE 54 PRODUCTION VEHICLE REQUIREMENT THROUGH FY-64. THESE DATES ARE VEHICLE NEED DATES AND HAVE TO BE BACK DATED FOR THE 12 MONTH PROCUREMENT LEAD TIME. (SP-3)

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JUN 0 4 1962

SSH

AFPR Surveillance of -62 Contract Spares Procurement

AFPRO (Col Voyles)
Lockheed Aircraft Corp
Missiles & Space Company
P. O. Box 504
Sunnyvale, California

1. This office plans to procure spare parts for the -62 contract on a fixed price basis to a definitive list. The items selected for procurement and the quantity of each item required will be determined by LMSC in accordance with methods and procedures which have been agreed upon with AFPR and AFSSD personnel. These procedures are to be formalized in writing by Mr. Garcia as soon as possible.

2. In order to assure that the spares procured under this contract represent a reasonable estimate of program requirements, it will be necessary to perform unusually comprehensive surveillance of the contractor's activities. This will require the full time of one qualified individual to audit the contractor's provisioning records and review the provisioning recommendations.

3. Accordingly, it is requested that this office be advised the name of the individual who will be responsible for accomplishing this action. We will take action to provide the designated individual access to the Agena D area.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

Copy to: SSSP (Mr Ward)

SSVZO/SSHAG
SSM

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184

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RR RJVZBX
DE RJEZFF 14
ZNR
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FM SCKSF ANDREWS AFB MD
TO RJVZBX/SSD LOS ANGLES CALIF
INFO RUSEVT/MSFC HUNTVILLE ALA
AF GMNC
BT
UNCLAS / MSFA 12-6-23
SSD FOR SSVZO, SSHAG AND SSM, I.'S FOR M-L AND MA. THE USAF HAS ACCEPTED THE RESPONSIBILITY FOR FUNDING, DESIGNING, MODIFYING AND EQUIPPING AMR COMPLEX 14 TO [illegible] ATLAS/AGENA CONFIGURATION. CURRENT PLANS ARE TO MODIFY THE EXISTING SERVICE TOWER RATHER THAN BUILDING A NEW SERVICE TOWER. AUTHORITY TO PROCEED WITH THIS MODIVICATION IS CONTINGENT UPON THE RELEASE OF THE PAD BY PROJECT MERCURY. IF AUTHORITY IS REQUIRED AT THIS TIME DUE TO LONG LEAD TIME FACTORS, REQUEST SUFFICIENT JUSTIFICATION BE PRESENTED ON A FORM 161 F[illegible] APPROVAL.
BT
12/1434Z JDN RJEZFF

NNNN

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SSHD Read File

[illegible] D/Maj Hegarle/[illegible] 3511

Request for Information by the Space
Technical Objectives Task Group

SSQ (LtCol C G Strathy)

1. Reference SSQ letter, same subject, dated 8 June 1962.

2. The attached information on program 6483 is forwarded as requested.

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

1 Atch
6483 Summary

SSH-958

If inclosures are withdrawn (or not attached), the classification of this correspondence will be [illegible]

[illegible]

514

Part I. 648B System Summary

A. 648B program.

B. The 648B program has been established for the design, development and production of Agena D satellite vehicles, standard in nature and capable of being used with a minimum degree of change in various satellite programs.

1. The prime objectives of the Agena D program are:

[redacted]

b. To provide a fixed-price procurement source for Agena D vehicles with a production capacity of five vehicles per month.

2. The basic vehicle makes maximum use of previously developed Agena vehicle equipment, incorporates modular construction, which divides into the following assemblies: forward section, propellant tank section, aft section, and the adapter section. The Agena D can be mated to the Atlas or Thor first stage booster for launch at PMR or AMR.

C. 1. Currently, the program is progressing on schedule with the first three Agena D's delivered on or before scheduled delivery date. Manual system testers are on line with FACE (Factory Automatic Checkout Equipment) on schedule to support the follow-on production rate.

2. Significant milestones include - first Agena D delivery 16 April 1962; definitized basic contract 26 April 1962; first launch 28 June 1962; cost proposal follow-on contract 15 June 1962; first production delivery September 1962.

Part II. System Description.

A. 648B program.

B. Description of System Elements:

1. Concept:

The design concept of the Agena D is to provide a program office with a standardized ascent or orbital vehicle that is reliable, easily adapted to program requirements, and

DOWNGRADED AT 12 YEAR INTERVALS; NOT AUTOMATICALLY DECLASSIFIED. DOD DIR 5200.10

[redacted]

2. Approach:

In conformance with directives received from Hq USAF and in recognition of the urgency attached to the satisfactory accomplishment of the accelerated Agena D program, certain extraordinary and unusual technical and contractual relationships were established with the contractor (LMSC) and rigorously adhered to by both the contractor and the government. In general these ground rules apply a streamlined AF/contractor management concept and include a DX priority, reduction in formal procedures, exclusion area in which to perform the work, and extraordinary program management channels. To insure compliance by both parties, these "ground rules" were made a preamble to the contractual work statement for the accelerated Agena D program. For a more detailed description and procedures, refer to Part II of the abbreviated program plan, program 662A (643B) dated 22 December 1961.

3. Objective or Capability.

The prime objectives of program 643B were to design, develop and produce a standardized second stage booster capable of performing essential ascent and/or orbital functions required

[redacted]

design objectives include accessibility, maintainability, producibility and make maximum use of already qualified Agena B components. In the design of the Agena D space was set aside for mission peculiar functions and related components. Thus, a standard second stage booster, basically simple in design, and capable of performing these missions, has been established. This vehicle has built-in adaptability for advanced components without change in basic design of structure. A modular concept is employed, in addition, for flight and mission equipment. Vehicle equipment has not been co-mingled with payloads and payload peculiar equipment or with additional vehicle equipment necessary for a particular mission. This program also provides as a primary objective, creation of a procurement package to permit a fixed price procurement and creation of a production capability of five Agena D's per month.

[redacted]

bench aligned and then installed in the vehicle as a unit, with the module mounting closely controlled to provide inherent alignment to the vehicle geometric axis. The gas valves and hydraulic servos will be mounted to the same vehicle geometric axis as the sensors. The Barnes horizon sensor is capable of viewing the horizon from either the horizontal or vertical positions and thus, will accommodate horizontally oriented vehicles, as well as nose up or nose down vertically oriented vehicles. The IMP has the MIG roll gyro for improved yaw control on orbit for horizontally oriented vehicles. For the vertically oriented vehicles the MIG yaw gyro will perform the gyro compassing.

5. Ground Support Requirements.

The two manual system test complexes (C-3 and C-5) have been modified and are on line to support the basic Agena D development contract. They will be used as back up to the Factory Automatic Checkout Equipment (FACE) being developed to support the follow-on production rate. This test equipment will test and checkout the basic Agena D for delivery to the using program; at this point the using program assumes responsibility for additional equipment installation and test to launch. Although the Agena D program responsibility ends upon using program acceptance, the design concept and test philosophy developed greatly influences the manner in which using programs conduct additional tests. Consistent with the vehicle design concept of interchangeability and easy access, the test and checkout equipment will not have diagnostic capability below the module/black-box level. A malfunction of a major piece of vehicle equipment will require a plug-in type replacement of the malfunction unit. This test philosophy will also be utilized at the launch base.

6. Booster/Power Plant Requirements:

The booster adapter supplied as part of the basic Agena D is compatible with the Thor DM21; as optional equipment, a booster adaptor kit is available to mate the Agena D with the Atlas booster. The main engine for the Agena D is a

[redacted]

propellant dumping system; secondary propulsion system; and Delayed Restart Kit.

C. Program Status.

1. In compliance with guidance received from Hq USAF by Hq USAF messages; AFSDC-F 82350 dated 30 Nov 61, AFSHM 80799 dated 22 Nov 61 and AFSSC-DQ 90915 dated 5 Jan 62, two separate contracts have been established to accomplish the stated objectives of the accelerated Agena D program. The basic development/engineering contract (AF 04(695)-21) provides the necessary engineering capability and industrial base for the design, development, fabrication, assembly, qualification and test of twelve prototype Agena D flight vehicles with initial delivery to support a 28 June 62 first launch. This contract was definitized as a CPIF contract in conformance with guidance received from Hq USAF on 26 April 1962. Equal weight was given to cost, schedule and performance for division of fee.

2. Milestone Chart:

Standardization Study	30 June 1961
Initial Go-Ahead	25 Aug 1961
Accelerated Go-Ahead	7 Nov 1961
Program plan approval	3 Jan 1962
Contract approved Hq USAF	26 Apr 1962 —
First Agena D Delivery	16 Apr 1962
First Launch	28 June 1962
Letter contract for production	18 Dec 1961
First production Agena D delivery	12 Sept 1962

3. Associated effort.

The basic R&D contract encompassed all requirements for the complete redesign and qualification of the Agena D vehicle. It authorizes the fabrication and use of development tools such as the Propulsion Test vehicle which was utilized to proof test the orifice pressurization system and the dual start capability of the rocket engine, the structural test vehicles which were utilized to concurrently qualify the forward equipment rack and aft structure, and the thermal

[redacted]

installing, qualifying, and [illegible] [illegible], [illegible] [illegible], program peculiar and component improvement modifications in support of all programs utilizing the Agena D stage.

D. Proposed Augmentation.

1. The basic R&D contract also provides for creation of the procurement package required to permit a fixed price procurement and the creation of a production capability of five vehicles per month. The follow-on Letter Contract was let on 18 Dec 1961 and has been established to support an initial delivery of 39 production Agena D vehicles at a production rate of four vehicles per month. This procurement package consists essentially of the Detail Model Specification, Vehicle Acceptance Test Specification, and Engineering Drawings to define the item under procurement, Hard Tooling, and a new LMSC facility (Building 152) to manufacture the vehicle, and Configuration Control to insure recurring quality. The production rate will be adjusted to satisfy the using program requirements.

2. Hq USAF has directed that no component improvement effort would be included in the fixed price for follow-on vehicles. In conformance with this direction an Agena D component improvement program was submitted and justified separately during the present budget cycle. This program will provide for improved reliability, producibility, mission adaptability and serviceability of the production Agena D. For further detail information on this program, refer to ABRIDGED package, 648B-Agena D, 62-40502, dated 2 April 1962.

E. Funding Summary.

1. The required funding for the basic R&D contract, the present production contract and the component improvement program are listed below. No funds prior to FY-62 were utilized.

	[redacted]
Basic R&D program	[redacted]
Follow-on production (39 vehicles/4 veh/mo.)	[redacted]
Component Improvement	[redacted]

[illegible] 57

[illegible]

SS 186

~~CONFIDENTIAL~~

[illegible]
[illegible] 7125 [illegible]
P [illegible]
TO LMSC J C [illegible], MANAGER, PROGRAM 102 DEPT 67-31 PLANT
BLDG 1.. SUNNYVALE CALIF
FROM DOUGLAS AIRCRAFT CO INC T D SMITH
INFO LMSC AUBREY GRAY, E E CROWTHER DEPT 62-60
INFO AFSSD MAJOR R R MOORE, SSZD AND CAPT J OSTROMINSKI, SSVXE
INGLEWOOD CALIF
BT
~~/C O N F I D E N T I A L/~~ IN REPLY REFER TO A2-260-TSP-337
ATTN H G IRWIN, CHIEF THOR AND SPECIAL SPACE SYSTEMS ENGINEER
SUBJECT.. DSV-2C ASCENT TRAJECTORY [redacted]
REFERENCE.. LMSC/A047851

517

THE CONTROL PROGRAM FOR DSV-2C FOR THE [redacted] FROM THE REFERENCE, AND LISTED IN TABLE 1, CAN BE ACCOMMODATED BY MODIFYING THE PROGRAMMER TO ALLOW A YAW RATE. THIS MODIFICATION IS NOT THE SAME MODIFICATION PRESENTLY BEING MADE ON THE DM21 PROGRAMMER FOR 622A PROGRAM VEHICLES.

THE CONTROL PROGRAM SATISFIES THE LMSC LOADING CONSTRAINTS /TABLE II/ AND THE PERFORMANCE REQUIREMENTS FOR THIS PARTICULAR MISSION AS LISTED IN TABLE III.

THE CONTROL PROGRAM DESCRIBED IN TABLE I DOES NOT ACHIEVE THE MAXIMUM VELOCITY CAPABILITY OF THE DSV-2C BOOSTER BECAUSE IT DOES NOT REPRESENT AN OPTIMUM TRAJECTORY. THE RESULTANT LOSS OF VOLOCITY, OF COURSE, REPRESENTS A REDUCTION IN PAYLOAD CAPABILITY AND/OR PAYLOAD MARGIN.

THE INITIAL YAW RATE ALIGNS THE VEHICLE PITCH PLANE WITH THE LOCAL VERTICAL. THE ANGULAR DEVIATION ACQUIRED DURING THE SIMULATANEOUS PITCH AND ROLL MANEUVER WHEN YAW IS EXCLUDED IS APPROXIMATELY MINUS 3.5 DEGREES AT 10 SECONDS AND IS REDUCED TO MINUS 2.5 AT 90 SECONDS. THIS SMALL DEVIATION HAS A MINOR AFFECT ON VEHICLE PERFORMANCE AND ACCURACY. DUE TO PROGRAMMER LIMITATIONS THE SAME YAW RATE WHICH CORRECTS THE PITCH PLANE ORIENTATION MUST BE USED TO ACHIEVE ANY PROGRADE INCLINATION CHANGES DESIRED, /I.E. INCREASED PAYLOAD CAPABILITY/. THE USE OF A YAW RATE WITH THE PITCH AND ROLL RATE IS AN UNNECESSARY LIMITATION ON THE VEHICLE PAYLOAD CAPABILITY IN AS MUCH AS IT DOES NOT AFFECT THE ANGLE OF ATTACK-DYNAMIC PRESSURE HISTORY EXPERIENCED BY THE VEHICLE.

1096.

THE ANGLE OF ATTACK-DYNAMIC PRESSURE HISTORY OF THE VEHICLE WILL BE ALTERED AS NEW DATA DEFINING VEHICLE CENTERS OF PRESSURE, AERODYNAMIC COEFFICIENTS, AND CENTERS OF GRAVITY BECOME AVAILABLE. THE CONTROL PROGRAM DEFINED IN TABLE I COMBINED WITH THESE DATA WILL NOT NECESSARILY SATISFY THE LMSC CONSTRAINTS, PARTICULARLY THE 600 DEGREE POUNDS/SQUARE FOOT IN THE 15,000 TO 40,000 FOOT ALTITUDE REGION.

CONSIDERING THESE ITEMS DAC RECOMMENDS THAT THE CONTROL PROGRAM SHOWN IN TABLE IV BE USED.

USE OF THIS CONTROL PROGRAM REQUIRES THE 600 DEGREE POUNDS/SQUARE FOOT CONSTRAINT BE REVISED TO ALLOW FOR VALUES UP 850 DEGREE POUNDS/ SQUARE FOOT. HOWEVER, AN INCREASE IN BOOSTER APOGEE [illegible] 1?1
[illegible]

[redacted]

[illegible] APPROXIMATELY [illegible] OF ACTUAL PAYLOAD CAPABILITY [illegible] BE ACHIEVED ALONG WITH ADDITIONAL INCREASED PAYLOAD CAPABILITY DUE TO THE VARIOUS PROGRADE INCLINATIONS WHICH NOW BECOME AVAILABLE.

THE LMSC CONSTRAINTS DEFINED IN TABLE II ARE VERY SIMILAR TO THE DM-21 CONSTRAINTS. THESE CONSTRAINTS SHOULD BE RE-EVALUATED CONSIDERING THE DSV-2C TRAJECTORY CHARACTERISTICS WHICH DIFFER DISTINCTLY FROM THOSE OF DM-21 FLIGHTS. DAC HAS EVALUATED THIS CONTROL PROGRAM TO CONSIDER THE EFFECTS OF 3 SIGMA HIGH THRUST LEVELS OF MAIN VEHICLE, AND SOLID BOOSTERS, 99 PERCENT VAFB WIND PROFILES, AND WIND SHEARS. EVEN IF THESE DEVIATIONS ARE COMBINED IN AN ADDITIVE MANNER THE ANGLE OF ATTACK-DYNAMIC PRESSURE LIMIT /8,600 POUND DEGREES/SQUARE FOOT/ FOR WHICH THE AGENA D SHROUD HAS BEEN DESIGNED /AT THE REQUEST OF LMSC/ CANNOT BE ACHIEVED. DAC CANNOT REPRODUCE OR SIMULATE CONDITIONS WHICH LMSC APPARENTLY IS USING TO DEFINE THE CONSTRAINTS OF TABLE II FOR THE DSV-2C VEHICLES.

DAC CANNOT UNDERSTAND THE APPLICABILITY OF THE CONSTRAINTS LISTED IN TABLE II FOR THE DSV-2C FLIGHTS, IN THAT WE MUST ASSUME THAT THE AGENA D STRUCTURAL LIMITS MUST AT LEAST BE EQUIVALENT TO THOSE REQUIRED FOR THE AGENA D SHROUD.

THE IMPROVED PERFORMANCE CAPABILITY FOR THE DSV-2C BOOSTER AND THE INCREASED MISSION FLEXIBILITY FOR FUTURE FLIGHTS ACHIEVED WITH THE CONTROL PROGRAM OF TABLE IV SHOULD BE USED TO EVALUATE REALISTIC CONSTRAINTS FOR DSV-2C VEHICLE FLIGHT MODES.

DAC RECOGNIZES THE SCHEDULING PROBLEMS EXISTING FOR THE FIRST 102 PROGRAM FLIGHT AND THEREFORE REQUESTS AN IMMEDIATE REPLY CONCERNING THE DESIRED 102 MISSION AND VEHICLE CONSTRAINTS TO BE SATISFIED. THESE DATA ARE REQUIRED TO GENERATE THE BOOSTER RANGE SAFETY DATA TO BE SUPPLIED TO LMSC TO MEET THE PMR RANGE SAFETY DOCUMENT SCHEDULE.

TABLE I

LMSC RECOMMENDED DSV-2C CONTROL PROGRAM

TIME /SECONDS/	PITCH RATE /DEGREES/SECONDS/	YAW RATE /DEGREES/SECONDS/	ROLL RATE /DEGREES/SECONDS/
0-2	0	0	0
2-5	0	0	5.2
5-10	MINUS 3.6	MINUS 0.75	5.8
10-55	MINUS 0.520	0	0
55-90	MINUS 0.520	0	0
90-130	MINUS 0.531	0	0
130-MECO	0	0	0

TABLE II

LMSC LOADING CONSTRAINTS *

ALTITUDE /FEET/	/ANGLE OF ATTACK/ /DYNAMIC PRESSURE/ DEGREE POUNDS/SQUARE FEET
0-15,000	2000
15,000-40,000	600
ABOVE 40,000	4000

* FOR PERTURBED VEHICLE FLIGHT EXCLUDING EFFECT OF WIND VELOCITY, WIND SHEARS AND GUSTS.

TABLE III

TABLE III

102 PROGRAM ASCENT TRAJECTORY PERFORMANCE REQUIREMENTS-*
CA

BOOSTER APOGEE ALTITUDE	[illegible] N. MILES
BOOSTER APOGEE VELOCITY /INERTIAL/	11,300 FPS
BOOSTER APOGEE INCLINATION	79 DEGREES

* DATA OBTAINED FROM MESSERS POLLAK AND HEMENOVER LMSC, DURING TELECON 6-8-62 AND 6-11-62

TABLE IV

DAC RECOMMENDED DSV-2C CONTROL PROGRAM

TIME /SECONDS/	PITCH RATE /DEGREES/SECOND/	YAW RATE /DEGREES/SECOND/	ROLL RATE /DEGREE/SECOND/
0-2	0	0	0
2-7	0	0	5.8125
7-10	MINUS 5.0448	0	5.8125
10-60	MINUS 0.63060	0	0
60-90	MINUS 0.47295	0	0
90-130	MINUS 0.27745	Y	0
130-TR	0	0	5.8125
TR-MECO	0	0	0

WHERE Y IS YAW RATE REQUIRED TO ACHIEVE DESIRED PROGRADE INCLINATION, AND TR IS END OF ROLL PERIOD REQUIRED TO ALIGN VEHICLE PITCH PLANE WITH LOCAL VERTICAL WHEN PITCH AND YAW MANEUVERS ARE PERFORMED SIMULTANEOUSLY.

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DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

END TULC .

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DE INGL ACX1 END

MEMORANDUM FOR RECORD 25 June 1962

SUBJECT: Component Improvement Briefing to MajGen Ritland and Dr Charyk

1. In conformance with Hq USAF message AFSSV dated 18 June 1962, a Component Improvement and Agena D Status Briefing was given to MajGen Ritland (Hq AFSC) at 1100 hours and to Dr Charyk (SAFUS) and the below listed individuals from the Secretariat and Hq USAF at 1600 hours, 25 June 1962.

2. The personnel in attendance at the briefing to Dr Charyk were: Secretary Imirie; Mr Williams, representing Secretary McMillan's office; Mr Lew Meyer, AFBAF; Col Phil Marr, Col Roberts and Col Keeffe, representing Hq USAF (AFSSV); Capt McCartney, representing Hq AFSC; Mr Fred O'Green, representing LMSC; and myself.

3. The proposed Agena D Component Improvement Briefing, together with a Status Briefing, prepared to be given to the Unmanned Launch Vehicle Panel of AACB on 28 June by LtCol Keeffe, Hq USAF, was reviewed by MajGen Ritland. He made numerous constructive recommendations concerning the sequence and technique of presenting the Component Improvement Briefing to Dr Charyk and approved the program for presentation.

4. The meeting with Dr Charyk was convened at 1600 hours. After a brief introduction by Col Keeffe, who outlined the purpose of the briefing as "to satisfy the SAFSP directive for a review by Dr Charyk of the proposed Component Improvement Program and his subsequent approval or disapproval thereon prior to funding or proceeding contractually," Col Kucheman was then introduced and initiated the briefing by first giving a brief status report of the progress made on the Agena D Program from 17 January to date. This status briefing indicated that (a) the first 4 Agena vehicles had been delivered on or ahead of schedule; (b) that AD-1 was on the launch pad at Vandenberg AFB, scheduled for launch on 27 June (one day ahead of schedule); (c) and that all components of the Agena D vehicle would have passed formal qualification tests prior to first launch. Dr Charyk seemed extremely pleased with the progress that had been made on the Agena D to date.

5. It was then explained that the title of the Component Improvement Program was a misnomer because the funds which would be requested during the course of the briefing covered not only the Component Improvement requirements but also the fund requirements for all Vehicle General Support at LMSC. The material presented is outlined on the briefing charts referenced below and was presented in the sequence delineated: 1, 2, 3, 45, 46, 47, 48, 49, 5, 4, 6, 7, 8, 9, 10, 13, 14, 15, 17, 18, 38, 39, 40, and 41.

6. The aspects of the briefing which concerned the management philosophy and approach recommended by SSD were thoroughly discussed. The discussion among Dr Charyk, Mr Imirie, Col Keeffe, and myself, which clearly identified the General Engineering Support requirements as "that amount of effort necessary at LMSC, Sunnyvale, to accomplish sustaining engineering support of the Flight Test Program and the Component Improvement Contract". At the point in the presentation when the specifics of the Component Improvement items were to be described (Charts 17 and subsequent), Dr Charyk acknowledged that he understood what we were attempting to do and deferred detailed discussion of each of the items in the interest of conserving time. Mr. O'Green was then excused from the meeting, and the financial requirements summary and recommendations were presented (Charts 38 and subsequent).

7. Throughout the briefing Dr Charyk and Mr Imirie discussed and elaborated on the approach recommended by SSD, Hq AFSC, and Hq USAF. He specifically directed that the following actions be taken:

a. That all fiscal requirements for Reliability Tests which supported the Production Contract be broken out, identified with the Production Contract, and costed thereunder.

b. That the Component Improvement items, together with any funds which were earmarked for follow-on R&D, be broken out, identified as Advanced Development per se, and funded as a separate Agena D line item. Dr Charyk commented to Mr Moyer that as long as this item did not greatly exceed $5 million, he felt that funds should be made available to permit continuation of this activity.

c. He further directed that all of the General Support fund requirements be prorated among using programs by increasing the unit cost of the delivered product -- Agena D.

8. The meeting was adjourned at 1740 hours.

9. Immediately after the meeting, I proceeded with Mr Meyer to his office and there I discussed the financial status of the Agena D. I made known to Mr Meyer the urgent need for the 1 July increment of funds for both the -21 and -68 contracts, pointing out that I would be out of funds on the -21 contract on 1 July and on the -68 contract, approximately 17 July. Further, I described to Mr Meyer the effects of the recent directives from Hq AFSC and Hq USAF which changed the basis of funding for the Agena D. Mr Meyer countered my comments pointing out that it was his belief that SSD, in submitting their Financial Plan for all programs for FY 63, had included a fund requirement of $2.1 million per Agena D. Should this information be factual, there should be no fund problem generated in following Mr Hoover's directive next year.

10. Following this discussion, Mr Meyer explained his remaining problem in clearing the reimbursable fund concept, and I placed him in direct contact with Mr Grifka (SSH) and Maj Jack Albert (SSV) because his proposed solution involved utilization of Agena B funds.

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

~~CONFIDENTIAL~~

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HEADQUARTERS
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
ANDREWS AIR FORCE BASE
WASHINGTON 25, D. C.

REPLY TO ATTN OF: MSFA

27 JUN 1962

SUBJECT: Agena D Presentation, 25 June 1962

TO: Memorandum for Record

1. Col Kucheman (SSD) briefed the following Hq USAF personnel at 1600 hours on 25 June 1962 on the Agena D Program:

Dr. Charyk	Col Marr
Mr. Imirie	Lt Col Keeffe
Mr. Myers	Col Roberts

Col Kucheman was assisted by Mr. O'Green (LMSC) during the technical part of the briefing. Attached are copies of the briefing charts used by Col Kucheman. The briefing was approved by Gen Ritland before it was presented to the Pentagon.

2. Col Kucheman gave a very brief status of the program to date. Dr. Charyk was "very pleased with the progress of the program" in that vehicles have been "clean" and deliveries were slightly ahead of the original schedule. Mr. Imirie was pleased with the contract status of the R&D contract.

3. The purpose of the presentation was to obtain Dr. Charyk's approval of the concept of operation during the follow-on production contract of the Agena D program. Dr. Charyk was very concerned as to how mission peculiar items would be handled. Evidently his prime concern was any mission peculiar items that were used by more than one program should be standardized and become optional equipment. Col Kucheman satisfied his concern with exception of the payload area. Dr. Charyk used the "Life Boat" program as an example. He said he did not want every program "having a different Life Boat" and expressed a desire to have the Agena D Program Director monitor the mission peculiar equipment to assure the basic purpose of the Agena D program of standardization was not endangered. Col Kucheman noted the point and stated this could result in a change in SSD and LMSC organization.

4. Dr. Charyk approved the need for component improvement and general support of the Agena D Program. He stated the component improvement program and the associated reliability program should be funded as a line item of the Agena D Program. Estimated cost of these programs is about $5.5M. The remainder of the proposed program cost concerning general engineering, reliability support for

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69-102954

the production contract, the Santa Cruz Test Base, the Development Test Lab, M. L. T. Support and AGE Design will be included in the basic cost of the Agena D to the using programs. (Informally, Col Kucheman advised the undersigned that, based upon LMSC's fixed price quote, the vehicle planning cost to using programs of $1. 3M is sufficient to absorb these extra costs, therefore reprogramming probably will not be required.)

5. Mr. Myers pointed out to Dr. Charyk that a precedent was being set for the Standardized Atlas. Dr. Charyk confirmed this and indicated that this should be the "pattern for all SLV's." At the close of the meeting, Dr. Charyk again stated he was pleased with the program and felt the primary objectivesof the program were being accomplished in accordance with original schedules and costs.

Forrest S. McCartney
FORREST S. McCARTNEY
Captain, USAF
Office, Manned Space Flight

1 Atch
Agena D Briefing Charts

62-102958

189

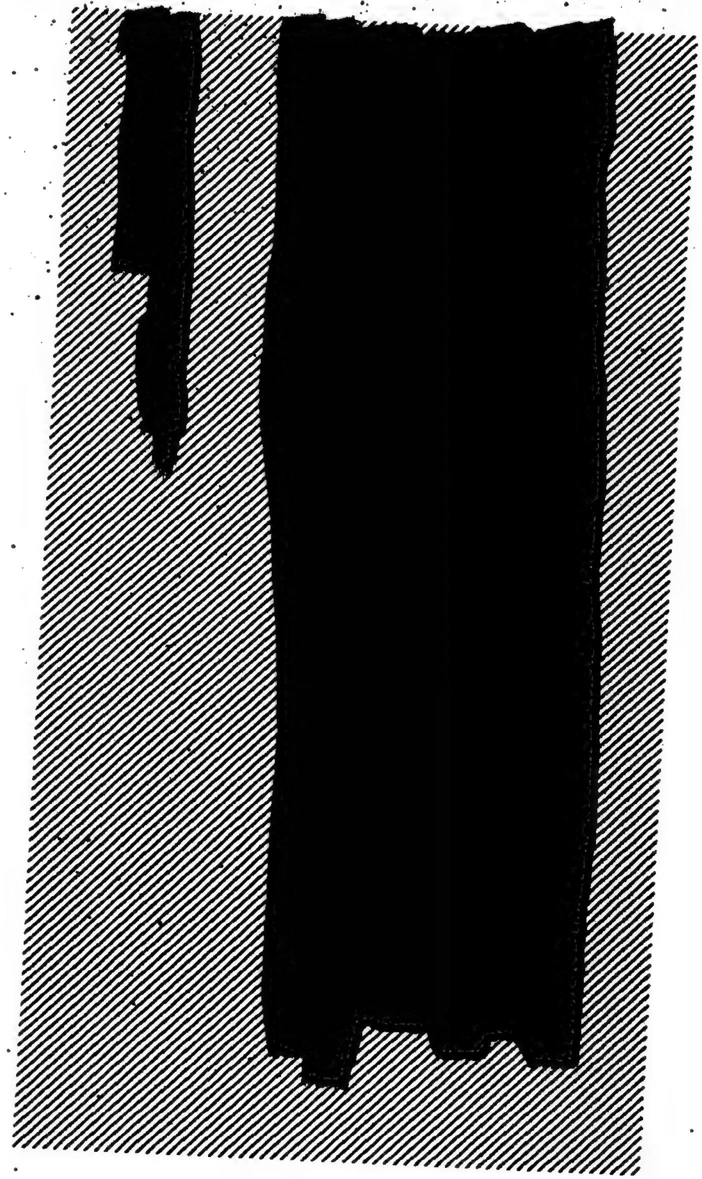
[redacted]

[redacted]

[redacted]

[redacted]

5-28



4/c Ashton

SSVZO
190

28 June 62

62 JUN 28

CZC3XA5972CJJ8416
PP RJWZSX
DE RUEAFF 53
ZNR
P 281713Z
FM MSFA ANDREWS AFB MD
TO SSD LOS ANGELES CALIF
BT
UNCLAS MSFA 28-6-61.
ACTION FOR SSVZO
REFERENCE YOUR MSG 22-6-31. YOU ARE AUTHORIZED TO PROCEED
WITH PLANS TO MODIFY AMR LAUNCH COMPLEX 14 TO ATLAS/AGENA
CONFIGURATION. P-690 FUNDING WILL BE IN ACCORDANCE WITH
SCC LETTER, SUBJECT: FY 1963 O&M AND RDT&E (BP-500) FINANCIAL
PLANS DATED 27 JUNE 1962, PARTICULARLY ATTACHMENT 3 CLASS
2500. THE AIR FORCE FORM 161 FOR 1.325 MILLION FY 1963
P-321 FUNDS HAS BEEN FORWARDED TO HQ USAF FOR APPROVAL.
YOU WILL BE ADVISED. P-313 FUNDS WILL NOT BE COMMITTED
PENDING APPROVAL OF MCP PROJECT.
BT
28/1813Z JUN RUEAFF

45208

~~CONFIDENTIAL~~

191

03 JUL [illegible]

[redacted]

532

1. Inclosed is the latest revision of the weight status of Agena D optional equipment. You are reminded that in all program performance analyses, the committed weight should be used. The purpose for transmitting the status report is only to permit evaluation of progress toward equalling or bettering the committed figure.

2. An indication of the technique of operation in Agena D is that this letter is the official notice that the basic Agena D committed weight has been reduced. For future efforts, the following committed weights are to be used:

a. Forward Section	268.0#
b. Aft Section	443.0
c. Sensor Doors	12.0
d. Propellant Tank Assembly	305.0
e. Propellant Tank Fairings	15.0
f. Booster Adapter	290.0
g. Telemetry Module	35.0
h. Guidance Module	97.0
i. Launch Base Installed Equipment	134.0
Total Basic Agena D	1599.0#

No change is made to the sequence or level of "dropped" weights. The reduction in basic weight is made at this time due to production history

ocument contains information affecting the national
e of the United States within the meaning of the
age Laws, Title 18 U.S.C., Section 793 and 794. Its
ission or the revelation of its contents in any
r to an unauthorized person is prohibited by law.

DOWNGRADED AT 3 YEAR INTERVALS
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

SSEDA

Capt Fiebelkorn/jrn

2 July 1962

SSI-976

~~CONFIDENTIAL~~

in which vehicles have been achieving lower than committed weights. Further changes may be made as sufficient actual weights are accumulated to justify such action.

ROY O. SMITH
Lt Colonel, USAF

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

1 Atch
Agena D Detail Wt Status,
dtd 1 Jun 62 (UNCL)

53/

This document contains information affecting the national defense of the United States within the meaning of the Espionage Laws, Title 18 U.S.C., Section 793 and 794. Its transmission or the revelation of its contents in any manner to an unauthorized person is prohibited by law.

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HEADQUARTERS
SPACE SYSTEMS DIVISION
AIR FORCE SYSTEMS COMMAND
UNITED STATES AIR FORCE
Air Force Unit Post Office, Los Angeles 45, California

REPLY TO
ATTN OF: SSVZO/Capt Taylor/BSD 3161/1st

SUBJECT: Conversion of AMR Complex 14 to an Atlas/Agena Configuration

JUL 05 1962

TO: SSHAG

1. Your office has been furnished copies of AFSC messages MSFA-12-6-23 and MSFA-28-6-61, which stated:

a. AF will fund for the modification of AMR Complex 14.

b. SSD has the authority to proceed with plans for the modification.

2. Funds necessary for this conversion have been requested through DCCB. These funds, though not yet available, are expected in the near future,

3. Request your office take necessary action to obtain appropriate direction and contractual coverage for Agena tasks associated with this conversion.

MARTIN KAHEL
Major, USAF
for
LEONARD D. PARSONS, JR.
Lt Colonel, USAF
Chief, Operations Division
Dir, SLV III (Atlas)

Copies to:
SSVZR
SSHL
DCLP-1
DCCB

#1 Ch I

ATCH #1

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JUL 09 1962

SSH

Agena D Configuration Control

SSC
SSZH
SSZD

[redacted]
SSVZR

6555 Aerospace Test Wg ([illegible])
6595 Aerospace Test Wg (VZZ)

1. In accordance with standard practice, SSH will set up in the near future a system of configuration control on the Agena D vehicle. These controls will continue on the vehicle throughout its life as well as those equipments installed under contracts controlled by SSH. Program peculiar items and the payload installed under program office contracts will remain the responsibility of the respective program office. It is obvious that the above procedure is mandatory in order that the Agena vehicle remain a standard production article and maintain a high level of reliability.

2. The control of EJA's after DD 250, a forerunner of configuration control, will be immediately discontinued and existing records destroyed. Program offices still using the Agena D may wish to continue this type of operation. If so, and existing records are desired for their files, SSH should be notified by 20 July 1962.

SIGNED

[illegible] L. [illegible], JR.
Colonel, USAF
System Program Director for Agena

#194

534

SSH

11 JUL 1962

Configuration Control of Agena D

SSZB
SSZC
SSZD
SSZI
SSZ[illegible]
SSZMA
SSZH
SSZX
SSVZR
[redacted]

1. The SPD for Agena is establishing configuration and control procedures, as outlined in AFSCM 375-1, on the Agena D vehicle.

2. The base-line configuration and future changes to the vehicle will be of direct concern to your program. Therefore it is essential that you have representation on the Configuration Control Board.

3. CCB initial operating procedures are presently being written and will be forwarded to you at an early date. It is hoped that within a reasonable length of time, procedures will become firm and more or less routine resulting in a minimum active participation reverting to a review function.

4. It is requested that the name, rank, serial number, of your designated member and alternate member be forwarded to Lt Col G. L. Auerbach, Bldg H-1 Room 2649, Ext 3951 by 16 July 62 and confirmed in writing so that applicable orders may be cut.

[illegible] O. SMITH
Lt Colonel, USAF
for [illegible] B. [illegible], JR.
Colonel, USAF
System Program Director for Agena

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SSZ

11 JUL 62

Configuration Control of Agena D

SSZC
SSZG
SSZD
SSZI
SSZA
SSZMA
SSZH
SSZX
SSVZR
[redacted]

1. The SPD for Agena is establishing configuration and control procedures, as outlined in AFSCM 375-1, on the Agena D vehicle.

2. The base-line configuration and future changes to the vehicle will be of direct concern to your program. Therefore it is essential that you have representation on the Configuration Control Board.

3. CCB initial operating procedures are presently being written and will be forwarded to you at an early date. It is hoped that within a reasonable length of time, procedures will become firm and more or less routine resulting in a minimum active participation reverting to a review function.

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ROY O. SMITH
Lt Colonel, USAF
for
HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

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CCN STATUS CONTRACT [illegible]-21 AS OF 12 JULY 1962

CCN No. 1
Issued 1 May [illegible]
Title: Develop[illegible] Module [illegible] the ATL [illegible].
Estimated cost: $228,[illegible].
Proposal received.
Negotiation not anticipated before 1 August.
We are attempting to expedite.

CCN No. 2
Issued 1 May 19[illegible]
Title: Midas Reliability Redirection
Estimated cost: $490,000.
Same status as No. 1, above.

CCN No. 3
Issued 1 May 1962.
Title: Discoverer Research Flight Test to Obtain Infra Red Data.
Estimated cost: $106,000.
Awaiting contractor's proposal.

CCN No. 4
Issued 3 May 62.
Title: J-900 Elimination, IRP, and Flight Control J-Box Patch Board Block Revisions.
Estimated cost: $60,000.
Awaiting contractor's proposal.

CCN No. 5
This CCN number was issued on or about 24 May 62 and pertains to adapter extension modification which is covered by the contractor's ECP 21-12. No CCN has been issued as yet, however, this proposal is presently being reviewed by Captain Fiebelkorn.

CCN No. 6
Issued 26 Jun 62.
Title: Agena D Acoustic Noise Test.
Estimated cost: $46,050.
Awaiting contractor's proposal.

[illegible] 196

+ [illegible]

IND 4-1

JUL 12 1962

[illegible]/Maj Moore/[illegible] 4061

Program Designation Change

[illegible] [illegible]

1. Thi[illegible] supersedes all previous correspondence and verbal instru[illegible] concerning the designation of the subject program.

[redacted]

to the above program. It will not be necessary to correct prior correspondence or documents. However, cross reference of the two numbers will be avoided where possible.

FRANK S. BUZARD
Lt Colonel, USAF

C. L. BATTLE
Colonel, USAF
Director
Program 698[illegible]

L.E.P.

~~J.B.J.~~

I called Maj Moore 15 Aug 62
He states this is not classified info
L.E.P.

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~~CONFIDENTIAL~~

SSH 12 JUL 1962

International Programs (U)

ESG-1 (Col Wickland)

1. This letter is to respond to your request dated 5 July 62, subject as above.

2. Before offering comments it would be well to outline the purpose of the SSH organization so that you may determine what type of support can be provided. SSH is not a conventional program office. It is divided into three major endeavors, procurement, vehicle engineering and AGE to include launch complex activation. All of these efforts center directly on the Agena D. Such program office functions that do exist are interspersed within the organization. Its primary function is to supply the Agena D to a using program office responsible for a payload. It also provides certain aspects of engineering support - a junior Aerospace - carried over from its SSD heritage.

3. The first possibility that comes to mind is one which is in being but could be expanded - fly a payload developed entirely by a foreign power. A present example is the Canadian developed payload supplied to NASA and programmed to be flown as an Agena Payload. The recent Telestar satellite and the OSCAR and Westford experiments are additional examples of payloads supplied by an outside Agency. This concept is the easiest to achieve, the coordination problem remaining comparatively simple and keeps the launch and tracking problems strictly in-house.

4. Using some of your examples as a springboard for further discussion it should be pointed out that space activities of the U.S. will have increased tremendously by the time your plans reach fruition. The tracking network now in being is at times overloaded. You can readily see that if foreign powers are in a position to launch satellites under our auspices we may feel obligated to supply tracking facilities at a time when we can least afford it. Four Agenas a month are rolling off the production line, not to mention other NASA programs that will be in their launch stage three to four years from now. Further, tracking facilities represent a considerable capitol investment and they also require continued support once they are constructed. It would be extremely beneficial if the foreign powers could bear some of this fixed expense of material, dollars, and manpower. Further, they have something not available to us, a

LtCol Smith/oem

SSH-[illegible]

11 Jul 62 ~~CONFIDENTIAL~~ DOWNGRADED AT 3 YEAR INTERVALS; DECLASSIFIED AFTER 12 YEARS. DOD DIR 5200.10

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foreign location and personnel who will not require the added incentive of overseas pay.

9. In conclusion SSH recommends the first simple step be that of flying foreign developed payloads. And second, that in the practical and more or less selfish interests of the U.S. that foreign powers be encouraged in the unglamorous expensive area of tracking and communications systems that will be vitally needed in future years to come.

SIGNED

HENRY B. KUCHEMAN, JR
Colonel, USAF
System Program Director for Agena

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SSH JUL 13 1962

648B Monthly Program Progress and Status Report
Period Ending 30 June 1962

AFSC (SCZI Col Rudenberg)
Andrews AFB
Wash 25 DC

1. The subject report, sixth of a monthly series, is submitted in compliance with Hq USAF request.

2. Reference is made to 648B Monthly Program Progress and Status Report for May, dated 14 June 1962. There is no change in Agena D storage requirements, launch schedules, production and delivery requirements, or procurement fund release schedules submitted with referenced report. Effort is currently underway to identify funding requirements for the Agena D contracts listed below in the brief resume of program status:

a. Vehicle milestone status

(1) R&D prototype. The basic contract for the Agena D provides for the design, development, test, qualification and delivery of twelve prototype vehicles. It is a program objective that the flight experience gained during the launch of these prototypes will be fed back into the production of subsequent models. Primary emphasis is being placed on the thorough and critical analysis of all flight data, successful or unsuccessful, of at least the initial four vehicles. This is being accomplished for the first flight. As of this report, the first five Agena D vehicles have been accepted by the Air Force. AD-1 was successfully launched on 27 June. AD-2 has been delivered to Vandenberg AFB and is undergoing preparations for launch on 29 July. AD-3, -4, and -5 are in varying stages of modification to the Discoverer configuration or in systems test in Building 104, Lockheed, Sunnyvale. Vehicles AD-6 and -7 are in the final phases of Agena D vehicle acceptance testing and are scheduled for delivery to the Air Force on 17 and 24 July, respectively. AD-8 has been assembled and is in 'initial rack test'. AD-9 through AD-12 are approximately 50% through the manufacturing process. This latter group of vehicles has an extremely critical delivery schedule which must be carefully monitored to avoid the possibility of slippage. The last vehicle under contract (AD-12) is scheduled for delivery to the

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SSH-985

Air Force on 11 September. The real test of Lockheed's readiness for the production contract will be demonstrated during the month of August when for the first time, they will be required to process four vehicles through the manual systems test complexes in approximately one-half the time per vehicle that they have demonstrated to date.

(2) Production schedule. The production rate has been established as four vehicles per month with the exception of November where it has been reduced to three.

b. Contractual milestones

(1) Basic R&D contract AF 04(695)-21. This is the first CPIF contract between the Air Force and LMSC. It was definitized and issued on 1 May with a scheduled completion date of 30 November, except for the negotiations of CCN's occasioned by changing requirements in other programs, i.e., the addition of the 239A reliability program when they dropped it for fund considerations, the 'backup' ATL scanner for Discoverer, etc., and the acoustical test on the structures which occurred subsequent to the definitization of the cost proposal. It is mutually agreed between Lockheed and the Air Force that this contract will be terminated on 30 November.

(2) Production contract AF 04(695)-68. This is the fixed price contract which is to be negotiated utilizing the 'production package' consisting of drawings, specifications and procedures evolved under the AF 04(695)-21 contract for the procurement of 'chinese copies' of the Agena D. The cost proposal for this contract was received on 22 June 1962. This proposal is currently under study by the AFSSD staff. Fact findings are scheduled for 26-27 July with negotiations scheduled to begin as soon afterward as the Air Force pre-negotiation position can be formulated and approved. In general, this proposal has impressed the Program office as being responsive, more thoroughly done than has been our experience in the past, and offering a total unit target price for hardware which is considerably below the LMSC ROM quote of 1.1M bantered about last November. AFSSD analysis thus far indicates that even this price has some negotiable aspects regarding wage rates, material charges, etc. Beyond these financial aspects it is mandatory that through the negotiation process a thorough understanding be established with LMSC, Sunnyvale, concerning the intent and procedures which will govern the administration of this type contract.

(3) Advanced Development contract AF 04(695)-191. This contract will provide for general engineering support of the Agena D and component improvement as necessary. On 25 June the Component Improvement Program was presented to General Ritland and Dr. Charyk and approved. AFSSD has been advised by Mr. Lew Meyer, HQ USAF, that this effort should be called 'Advance Development', and that 5.4M dollars is being added to the FY-63 Agena D line item to permit the R&D aspects to be pursued.

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Additionally Dr. Charyk instructed that the remaining 5.[illegible] dollars necessary to pursue this contract be obtained from the using programs by prorating this cost to the cost of the production Agena D. The objective of this contract has been mutually established with LMSC. It is contemplated that all changes to the Agena D subsequent to 30 November will be designed, developed, tested and qualified in the DTV using the facilities of the Development Test Laboratory prior to submission of an ECP. The drawings, specifications, and procedures evolved in this manner would then be reviewed by the Air Force Configuration Control Board, together with the cost proposal and recommended effectivity date. If the Board approves the proposed change, a change would be negotiated on the AF 04(695)-68 production contract. It is conceivable that the time phasing of all contemplated improvements can be coordinated to minimize the effect on the production line. A work statement is currently scheduled to be negotiated on 30 July. The concept of this contract is extremely important for, for the first time, it provides the Space Systems Division and the Agena D Program Director with the required contractual instrument and necessary funds for the orderly improvement and updating of the Agena space vehicle. Since the Agena is the heart of all of the primary DOD space programs it is essential that the reliability and, where required, performance of this stage be kept in phase with the using program requirements. It was envisioned that this type of effort would be frugally managed and administered essentially as a level of effort type contract. In addition, the general engineering support type activities, i.e., the operation of the Development Test Laboratory and Santa Cruz Test Base, the analysis of flight test results, reliability program for the Advanced Development program and the production contract, and such other special studies and reports as would be required, would be administered through this contract. In view of the foregoing, it is considered appropriate that this contract be a CPFF type contract. However, the possibility of writing a CPIF contract should be thoroughly investigated.

(4) Booster programs contract AF 04(695)-79. [redacted] [redacted] all utilize the Agena D vehicle essentially as an ascent booster. The degree of modification or addition is considered to be relatively minor. In view of this fact LMSC proposed and AFSSD approved the adoption of 'Plan A', which was a proposal that the Agena D vehicles furnished for these programs, be converted and checked out to the program peculiar configuration in the same LMSC facility (Building 152) which is planned to be utilized for the production facility. This additional activity is to be 'off-line' and will entail (a) the addition and/or deletion of optional and program peculiar equipment, (b) the modification of the manual test complexes C-3 and C-5 to accept the program peculiar program peculiar requirements, and (c) the complete systems tests of the modified booster. At the time this philosophy was adopted by SSD, contractual proposals were in the process of being submitted to support the aforementioned programs. In order to more effectively administer these contracts and to avoid unnecessary

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[redacted]

duplication among them it has been proposed and accepted that these contracts be combined into the booster program contract. Better than one-half of the activity required to support each of these programs is encompassed by the responsibilities that will be assigned to the Agena D Program Director under 'Plan A'. The remaining portion of Lockheed's support which these programs will need, i.e., design, development, test, qualifications and manufacture of program peculiar hardware and direct mission support as required, will be included in the contract and arranged in such a manner that it will be administered directly by the appropriate program office. In this manner maximum utilization of the LMSC vehicle organization can be insured. To date Program 621A has reached the handshake stage with a supplemental agreement (which will convert the current proposal to the format discussed above) scheduled for negotiation on 3 August. It is contemplated that Program [redacted] will adopt this contractual approach during the course of negotiation.

(5) Launch services contracts. In order to fix the responsibility for all Agena problems under one organization, the SPD for Agena will take over the responsibility for the AMR launch services contract and as soon as it is negotiated, phase into the PMR contract. The AMR contract is scheduled to be definitized in early September, while the currently existing PMR contract will not require renegotiation until January 1963.

(6) Maintenance and repair contract. To round out the responsibilities of the Agena Program Director, it is proposed that maintenance and repair contract and possibly an AGE contract be written on a CPFF or call basis.

c. Major Technical Milestones.

(1) Essentially the Agena D has reached the frozen design status. Within the next 30-45 days the 'complete' production package should be available. At this time, sufficient information is on hand to permit Lockheed to submit the fixed price proposal. The Lockheed Program Director has accepted the obligation to study in detail the performance of the initial four flights, in order to evaluate the effectiveness of the design and establish confidence limits for the equipment. It is contemplated that any marginal performance or potential marginal performance will be identified as a result of this activity and necessary corrective action cycled back to update the 'production' package. AD-9's delivery and flight will constitute completion of the development prototype. This vehicle represents the final configuration with the strengthened forward and aft equipment racks and the addition of the Type V telemetry and Mark X inverters.

(2) Configuration Control. Configuration control is a new task for Space Systems Division personnel. It is being established

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for the first time with the Agena D program and should become effective 15 September when the Air Force Agena D Configuration Control Board assumes the responsibility from the LMSC Program Director. Our staff for this effort at the present time consists of two officers. In all probability it will become necessary to augment this capability once the magnitude of this operation is known and understood.

3. This report shows Agena D status through 6 July 1962, with significant milestones through 22 December 1962.

SIGNED

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director
for Agena

4 Atch
1. 642B Program Progress Report (2 cys)
2. Prog. Milestones (C) LMSC A047672 (2 cys)
3. Major Development Milestones (2 cys)
4. Critical Milestones Remaining (S) (2 cys)

Copy to: Hq USAF (AFSSV-EQ)

SSH-985

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[redacted]

JUL 18 1962

SSH

Preliminary Impact Evaluation of Impending Aerospace Industry Strike on SSD Programs (Report Control Symbol (RCS) AF-XDL-N2)

SSKR (Mr Montgomery)

Attached hereto is a Strike Impact Report for Lockheed Missile & Space Company as it effects SSH Contracts AF 04(695)-21 and AF 04(695)-68.

HENRY B. KUCHEMAN, JR.
Colonel, USAF
System Program Director for Agena

1 Atch
Rpt AF-XDL-N2

STRIKE IMPACT QUESTIONNAIRE

L/C AF 04(695)-21 and -63

1. Programs: Agena D is in support of the following programs:

[redacted]

Prime contractor is:

Lockheed Aircraft Corporation
Lockheed Missile & Space Company
P O Box 504
Sunnyvale, California

Major subcontractors:

a. Bell Aerosystems Company
Bell Aerosystem Corporation
Buffalo 5, New York

b. Telecomputing Corporation
Whittaker Controls & Guidance Division
9551 Canoga Avenue
Chatsworth, California

c. Lear Incorporated
Romec Division
Abbe Rd
Elyria, Ohio

d. Minneapolis-Honeywell
Aeronautical Division
Minneapolis, Minnesota

e. Barnes Engineering Company
30 Commerce Street
Stanford, Connecticut

f. Galton Industries, Inc.
Engineering Magnetics Division
10341 Cerise Avenue
Hawthorne, California

2. Anticipated impact (calendar days lost to schedule) if strike occurs on 26 July, based on:

a. Plant operations.

(1) Lockheed's present position is that with non-union personnel, plus other management actions, the present schedules can be held. If a change to this thinking should occur, Lockheed will file an official notification.

(2) The official Lockheed position reflecting the above is being forwarded by separate letter to this office.

b. Test Site and Launch Schedules.

(1) See remarks as above.

3. Anticipated cost to program due to strike (direct and indirect):

a. Based on information presented in 2 above, no program costs increase is projected at this time.

4. Action being taken or contemplated to minimize program delay in the event of a strike.

a. None in view of the above.

5. General remarks:

a. None.

100

[redacted]

... 73 Test Group(DCLS, C. J. Ernst)
Edwards AFB Calif

1. Reference is made to your 13 June 1962 transmittal of copies of AFSC Forms 81 and 81A establishing "Development" status for the XLR81-BA-9 rocket engine.

2. The XLR81-BA-9 rocket engine has completed PFRT as described in attachment 1 and should be redesignated YLR81-BA-9. Minor changes in the engine for the Agena D configuration, chiefly a change in turbine exhaust duct design, are outlined in attachment 2. To insure positive identification of Agena B and Agena D engines, the Agena D engine should be designated YLR81-BA-11. The XLR81-BA-9 PFRT is considered completely applicable to the -11 (Agena D) engine; no additional testing is required.

3. Under Contract AF04(695)-129 preliminary studies and tests began in May, 1962 to modify the starting system of the XLR81-BA-9 to provide multiple restarts for the GEMINI target vehicle (Agena). The starting system will be modified to remove the present solid grain start can configuration and to provide starting by direct ignition of the primary propellants (UDMH and IRFNA) in the gas generator. The basic turbine-pump and thrust chamber will be unchanged. The previous relationships between the Space Systems Division, Lockheed Missiles and Space Company (LMSC) as prime contractor, and Bell Aerosystems Company as engine subcontractor are still established for this development. Preliminary Flight Rating Tests on the modified engine are scheduled for completion in June, 1963. This multiple restart rocket engine should be designated XLR81-BA-13. The immediate application of this engine will be to provide the required mission capability for the NASA GEMINI target vehicle, but it is conceivable that the modified engine might become the standard engine for the Agena D for all programs. A model specification, LMSC 1414463, covering the requirements for the XLR81-BA-13 rocket engine will be prepared by LMSC.

4. Your office is requested to take the necessary action to apply for the designation actions as required by paragraphs 2 and 3 above: YLR81-BA-7 (completion of PFRT), YLR81-BA-11 (Agena D version), and XLR81-BA-13 (Multiple restart engine for GEMINI target vehicle). All engines remain in "Development" status.

FOR THE COMMANDER

SIGNED

EDWARD F. BLUM
Lt Colonel, USAF
Chief, Vehicle Engineering Div

2 Atch
1. ARDC Form 81A
2. Agena B - Agena D
Rocket Engine Differences

SSHAA-2/mst

19 Jul 62

201

[redacted] JUL 1962

Lockheed Aircraft Corporation
Missiles and Space Company
Attn: P. Weller (60-64)
Post Office Box 504
Sunnyvale, California

875

1. Hq SSD has directed under Contract AF04(695)-129 the development of a multi-start engine capability for the Project GEMINI-Agena target vehicle. This will be accomplished by modification of the current Agena-D engine, the XLR81-BA-9 (Bell Aerosystems Co. Model 80[illegible]) after completion of development and accomplishment of a satisfactory Preliminary Flight Rating Test. The resulting multi-start version will be assigned a new Air Force dash number. A test program is being planned to demonstrate performance reliability equivalent to the current Agena engine.

2. Hq SSD has declared in its letter SCVZR/Major Albert dtd [illegible] July 1962 to Mr. L. E. Root that "---b. The multi-start engine with the simplified start features will be configured so that it is mechanically compatible with the basic Agena-D structure. This engine will be designated as alternate-basic for the Agena-D pending resolution of its acceptability as the replacement for the XLR81-[illegible] (8096) as Agena D standard."

3. In addition to being mechanically compatible with the basic Agena-D structure it is required that multiple-start engine performance be compatible with all present DOD and NASA space missions using the Agena-D stage vehicle. In this connection several performance questions arise:

a. For all programs, DOD and NASA, what is the total mission impulse requirement for engine starting?

b. What is the minimum time duration requirement to achieve 3.a?

c. What is the limitation on repeatability?

4. The multi-start engine development program should be tailored to satisfy the requirements as determined by paragraph 3 above.

5. The above information should be provided Hq SSD (SSHAA) by 15 August 1962.

SIGNED

EDWARD F. BLUM, Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

Cy to: LMSC (F.W. O'Green, Dept 60-03)
LMSC (J. Plummer, Dept 60-01)
LMSC (H. T. Luskin, Dept 62-90)
LMSC (L. R. Viggiano, Dept 62-44)
LMSC (R. D. Kearton)
SSVZR (Maj Albert)
AFPRO/LMSC (Col Voyles)

SSVR
[illegible] Phillips/OS 9-4662, Ext. [illegible]

Request for Type Designation, Agena D Vehicle. [illegible] 27 1962

AF [illegible]
Wright-Patterson AFB
Ohio

1. The following information is provided in support of a request for type designation for the Agena D vehicle.

a. The Agena D vehicle is capable of performing a variety of space missions, and is capable of attaining a wide range and variety of orbital and space trajectories. It can perform as an intermediate stage booster, an orbital vehicle, or as a space probe. An engine restart capability enables the Agena D to achieve precise, circular orbits, or to make trajectory changes in space. The vehicle can be programmed to accomplish attitude changes, and its stabilization system, which may function actively or semi-actively, provides vertical as well as horizontal stabilization in orbital flights. Alternate adapters enable the Agena D to use either a Thor or an Atlas as a first-stage booster.

b. Vehicle systems are composed of spaceframe, propulsion, electrical power, guidance and control, and electronic (communication, command and tracking) equipment.

(1) The spaceframe houses and supports the various vehicle systems and components and provides the support platform for space systems payloads. It is divided into a forward section, a propellant tank section, an after section, and a booster adapter section. Incorporated into the spaceframe are the propellant tanks, gas storage vessels and the plumbing, cabling, and the bracketry required for installation of the Agena D systems and components.

(2) The propulsion system consists principally of a rocket engine with its propellant-flow and electrical-control equipment, and the propellant equipment necessary to support the rocket engine operation. The Agena D rocket engine is a USAF Model XLR-81-BA-11 (Bell Aerosystems Company, Model 8096) liquid bi-propellant power package with a single combustion chamber.

(3) The electrical power system furnishes basic electric power sources and distribution circuits. The system supplies electrical power from primary batteries mounted internally within the vehicle. Electrical system components also modify or alter electrical power supplied by the batteries, and distribute this power through appropriate harnesses to the using components.

/Phillips/jrn
[illegible]R

23 July 1962

(4) The Agena D guidance and control system performs vehicle guidance, attitude control, and flight programming functions necessary to accomplish the program mission. The guidance and control system includes pneumatic, hydraulic, and velocity controls, sequence timing, and the ability to accommodate a variety of programmed operations.

(5) Vehicle-borne communications, command, and tracking equipment is utilized for gathering and transmitting vehicle performance data for vehicle command functions, and for vehicle tracking and acquisition. The equipment provides radio-frequency data-links to monitor the operating conditions of the vehicle equipment. The system controls vehicle operations by receiving and decoding command messages from the ground stations. Additionally, the system includes units that receive and transmit signals to ground stations for vehicle tracking purposes and for computing the vehicle range and location.

2. For your information, previous models of this vehicle, including payload, procured under the WS-117L Program were designated as XRM-81.

3. Request that a type designation for the Agena D vehicle be assigned, and that SSD (SSER) be advised accordingly.

FOR THE COMMANDER

SIGNED

DEAN L. KENNEDY
Major, USAF
Chief, Requirements & Programming Office

#198

ACTION 55
203
52 AUG -1 P
INFO

INGL 4220 V SNON 7052 8-1-62 315 P

TO LOCKHEED ACFT CORP D J GRIEBON MGR SATELLITSYSTEM PLANT 1 BLDG 104
SUNNYVALE CALIF
FROM DOUGLAS AIRCRAFT CO INC T D SMITH A2-200
ATTN F A SHELLY DEPT 53-18 MR D KELLEY SUNNYVALE CALIF
A K J GRAY DEPT 62-60 SUNNYVALE CALIF
H A PAULDEN DEPT 62-60 SUNNYVALE CALIF
E E CROWTHER DEPT 62-60 SUNNYVALE CALIF
J CLAUSS DEPT 72-25 BURBANK CALIF LMSC
ATTN AFSSD SSVXE INGLEWOOD CALIF

IN REPLY REFER TO-- A2-260-S/WT-26 ATTN G G MCGEACHY
SUBJECT. PRELIMINARY WEIGHT DATA FOR DSV-2C/AGENA, TOTAL VEHICLE
THE FOLLOWING DATA PRESENT PRELIMINARY WEIGHT, CENTER OF GRAVITY AND MOMENT OF INERTIA DATA FOR DSV-2C/AGENA, TOTAL VEHICLE. THE APYLOAD DATA WERE OBTAINED FROM LMSC TWX A047376, DATED 6-2-62, FOR PAYLOAD 622A. THE DRY BOOSTER DATA ARE PRELIMINARY. THE PROPELLANT LOADING IS COMPUTED USING NOMINAL PERFORMANCE VALUES FOR THE MB-3, BLOCK II ENGINE. THE DSV-2C BOOSTER USES RJ-1 FUEL WITH AND ASSUMED DENSITY OF 53.17 LB/FT3. A DENSITY OF 70.80 LB/FT 3 IS ASSUMED FOR THE OXIDIZER. THE PRESSURIZATION GAS AND LUBE OIL VALUES ARE CALCULATED USING NOMINAL RATES AND ARE BASED ON THE BURNING TIME OF THE NOMINAL MB-3, BLOCK II ENGINE.

SOLID PROPELLANT BOOSTER BURNOUT OCCURS AT 39.5 SECONDS AND SOLID PROPELLANT BOOSTER SEPARATION OCCURS AT 65.0 SECONDS. WEIGHT, CENTER OF GRAVITY AND MOMENT OF INERTIA DATA ARE INCLUDED FR THE BOOSTER AT VERNIER ENGINE BURNOUT, ASSUMING THE MAIN TANK RESIDUALS TO BE IN A FREE-FLOATING STATE.

ITEM	WEIGHT- LBS RJ-1 FUEL
TOTAL PAYLOAD	17,391
DRY WEIGHT OF LIQUID BOOSTER	6,846
TRAPPED PROPELLANTS	423
PRESSURIZATION GAS	434
UNUSABLE LUBE OIL	53
RESIDUAL PROPELLANT /0.4 PCT RESIDUAL/	400

VEHICLE AT STAGE I VERNIER ENGINE BURNOUT /156.68 SEC./	25,547
VERNIER PROPELLANTS BURNED	75

VEHICLE AT STAGE I MAIN ENGINE BURNOUT /147.68 SEC./	25,622
LIQUID PROPELLANTS BURNED /FROM 65.0 SEC. TO B. O	

53 047

R U STILL THERE PL RGR RGR WHERE SHALL I START
AFTER LIQUID PRPELLANTS BURNED ETC ...T

ITEM	WEIGHT- LBS RJ-1 FUEL

VEHICLE AT STAGE I MAIN ENGINE BURNOUT /147.68 SEC./	25,622
LIQUID PROPELLANTS BURNED /FROM 65.0 SEC. TO B. O./	
LIQUID OXYGEN	37,220
FUEL	18,269
LUBE OIL BURNED	41
PRESSURIZATION GAS OVERBOARD	95

```
VEHICLE AT STAGE I VERNIER ENGINE BURNOUT
     /156.68  SEC./                                     25,547
VERNIER PROPELLANTS BURNED                                  75
-----
VEHICLE AT STAGE I MAIN ENGINE BURNOUT
   /147.68 SEC./                                        25,622
LIQUID PROPELLANTS BURNED /FROM 65.0 SEC. TO B. 0
R U STILL-THERE PL "RGR RSR WHERE SHALL I START
AFTER LIQUID PRPELLANTS BURNED ETC  ...T
-----
VEHICLE AT STAGE I MAIN ENGINE BURNOUT
   /147.68 SEC./                                        25,622
LIQUID PROPELLANTS BURNED /FROM 65.0 SEC. TO B. 0./
  LIQUID OXYGEN                                         37,220
   FUEL                                                 18,269
LUBE OIL BURNED                                             41
PRESSURIZATION GAS OVERBOARD                                95
VERNIER PROPELLANTS OVERBOARD                               37
-----
VEHICLE AFTER SOLID BOOSTER SEPARATION /65.0 SEC/
                                                        81,284
BURNED OUT SOLID BOOSTERS /3/
   /INCL ATTACH FITTINGS ON BOOSTERS/                    5,562
LIQUID PROPELLANTS BURNED /FROM 39.5 TO
      65.0 SEC./
  LIQUID OXYGEN                                         11,805
  FUEL                                                   5,470
LUBE OIL BURNED                                             13
PRESSURIZATION GAS OVERBOARD                                23
VERNIER PROPELLANTS OVERBOARD                                9
-----
VEHICLE AT SOLID BOOSTER BURNOUT /39.5 SEC/ 104,166
SOLID PROPELLANT BURNED                     22,278
LIQUID PROPELLANT BURNED /L. O. TO 39.5 SEC/
  LIQUID OXYGEN                                         18,022
  FUEL                                                   8,352
LUBE OIL BURNED                                             20
------
VEHICLE AT LIFTOFF                                     152,838

PROPELLANTS IN MAIN TANKS AT LIFTOFF                   100,062
  LIQUID OXYGEN                                         67,675
  FUEL                                                  32,387

VEHICLE AT VERNIER ENGINE BURNOUT/FREE-FLOATING MAIN TANK RESIDUALS/
WEIGHT                                  25,351
LATERAL CENTER OF GRAVITY             100.0
HORIZONATL CENTER OF GRAVITY          132.1
VERTICAL CENTER OF GRAVITY            100.0
PITCH MOMENT OF INERTIA            503,371
ROLL MOMENT OF INERTIA               5,677.1
YAW MOMENT OF INERTIA              503,348

VEHICLE AT VERNIER ENGINE BURNOUT /0.4 PERCENT RESIDUALS/
LATERAL CENTER OF GRAVITY             100.0
HORIZONTAL CTR OF GRAVITY             135.2
VERTICAL CENTER OF GRAVITY            100.0
PITCH MOMENT OF INERTIA            511,151
ROLL MOMENT OF INERTIA               5,677.2
YAW MOMENT OF INERTIA              511,135

VEHICLE AT MAIN ENGINE BURNOUT /0.4 PERCENT RESIDUALS/
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53047

53047

53047

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VEHICLE AT MAIN ENGINE BURNOUT /0.4 PERCENT RESIDUALS/
---
LATERAL CENTER OF GRAVITY          100.1
HORIZONTAL CENTER OF GRAVITY       136.7
VERTICAL CENTER OF GRAVITY         100.0
PITCH MOMENT OF INERTIA         515,407
ROLL MOMENT OF INERTIA            5,686.7
YAW MOMENT OF INERTIA           515,400
VEHICLE AFTER SOLID BOOSTER SEPARATION
---
LATERAL CENTER OF GRAVITY          100.0
HORIZONTAL CENTER OF GRAVITY       359.7
VERTICAL CENTER OF GRAVITY         100.0
PITCH MOMENT OF INERTIA       1,085,058
ROLL MOMENT OF INERTIA            6,743.3
YAW MOMENT OF INERTIA         1,085,053

VEHICLE AT SOLID BOOSTER BURNOUT
LATERAL CENTER OF GRAVITY          100.0
HORIZONTAL CENTER OF GRAVITY       380.8
VERTICAL CENTER OF GRAVITY         100.0
PITCH MOMENT OF INERTIA       1,239,381
ROLL MOMENT OF INERTIA           12,544.9
YAW MOMENT OF INERTIA         1,239,377

VEHICLE AT LIFTOFF
--
LATERAL CENTER OF GRAVITY          100.0
HORIZONTAL CENTER OF GRAVITY       409.3
VERTICAL CENTER OF GRAVITY            100.0
PITCH MOMENT OF INERTIA       1,592,790
ROLL MOMENT OF INERTIA           36,468.3
YAW MOMENT OF INERTIA         1,592,785

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KT-10
4-6

204

AUG 1 1962

SSHKK/H. F. Becker/4115 R&D

AF 04(695)-194, Authority for Non-Competitive Negotiated Procurement

SSE

1. ASPR 3-102 as revised stresses the importance of minimizing non-competitive procurements by requiring approval of such procurements at a level higher than the contracting officer.

2. The procurement plan for Agena D was presented to the Under Secretary of the Air Force; Assistant Secretary, Material; Assistant Secretary, R&D; General Thurman; General Holzapple; General Farnsworth, General Mitchell; General Curtin; and various members of their staff. These presentations were made 17 November 1961 and outlined the basic concept for the Agena D, the ground rules for procurement and management of the program. The presentations were approved, and Lockheed Missile and Space Company was selected as the contractor.

3. The subject contract is a follow-on Agena D contract for long lead time materials to meet urgent delivery requirements established by Hq USAF, TWX AFSSV 66176 and TWX MSFA 17-7-25. It is therefore proposed to place this contract with LMSC on a non-competitive basis for the following reasons:

a. This contractor has created a capability to produce the Agena satellite vehicle, through continuous R&D effort over a period of five and a half years, and expenditures of many millions of dollars of public funds.

b. The delivery requirements of the Government for Agena D vehicles are such as to demand maximum program acceleration.

c. No other contractor could conceivably acquire the necessary know-how and production capability without the duplicate expenditure of large sums of money, and could not, in any event, produce the Agena D vehicle in the time required.

d. The contractor is presently producing the Agena D vehicle and this is a natural follow-on to the prior contract.

4. In view of the above stated circumstances, a competitive solicitation is precluded, since LMSC is the only known contractor that can meet the requirements.

SSHKK/es

H. F. BECKER

30 Jul 62

5. Authority is therefore requested pursuant to ASPR 3-102 to proceed with the subject procurement on a non-competitive basis.

H. F. BECKER
Contracting Officer

1st Ind (SSH/Col Fletcher/R&D 3084) AUG - 1 1962

TO: S[illegible]

The circumstances outlined in the basic letter establish the impracticability of a competitive at this time for Agena D vehicles. Therefore, I concur in the plan for a non-competitive procurement to LMSC.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

UNCLASSIFIED

205

[redacted]

AEDC ARNOLD AFSTA TENN

INFO: LOCKHEED ACFT CORP MISSILE & SPACE CO SUNNYVALE CALIF

BELL AEROSYSTEMS CO, NIAGARA FALLS, N.Y.

UNCL SSH 2-8-1

FOR AETR, LT COL HARRISON. INFO LMSC L. R. VIGGIANO, BAC, A. J. MARCHESE. REF AEE 19-7-20. CONFIRMING CURRENT AGENA MULTIPLE RESTART ENGINE TEST REQUIREMENTS, ALTITUDE DEVELOPMENT TEST TIME REQUIRED JANUARY 1963 THROUGH MARCH 1963 WITH CELL BUILDUP BEGINNING MID-DECEMBER 1962, RELIABILITY DEMONSTRATION TEST TIME REQUIRED JUNE 1963 THROUGH NOVEMBER 1963 WITH CELL BUILDUP BEGINNING MID-MAY 1963. THIS ENGINE IS DESIGNATED USAF MODEL XLR81-BA-13 AND BAC MODEL 8247. TENTATIVE TEST COORDINATION MEETING DATE IS 31 AUG 62 AT AEDC.

/1520
2 AUG 1962

SSHAA-2

James E. Wallace, 1st Lt., USAF/mst
3951 SSHAA-2/mst 1 1

UNCLASSIFIED
1 Aug 62

ROY O. SMITH, JR.
Lt Colonel, USAF

EDWARD F. BLUM, Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

[illegible]/[illegible]/3971 03 AUG 1962

Agena Rocket Engine Designations

Lockheed Aircraft Corp
Missiles & Space Co
Attn: L. R. Viggiano, Dept 62-14
Post Office Box 504
Sunnyvale, Calif

1. This office has recently taken action to request Air Force Model designations appropriate to the several Agena engine types and levels of development. Completion of PFRT of the XLR81-BA-9 engine (BAC Model 8096) has qualified that engine for designation YLR81-BA-9. This designation was officially approved 27 July 1962 and should be used when referring to this engine.

2. Coordination on designation for the Agena D engine and the multiple restart engine has been informally accomplished, including allocation of designations by ASD. Formal approval is anticipated within 60 days. The designations allocated are YLR81-BA-11 for the Agena D engine and XLR81-BA-13 for the multiple restart Agena engine (BAC Model 8247).

3. All engines remain in "Development" Status as defined by AFSC Reg 80-4.

SIGNED

EDWARD F. BLAH, Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

Cys to: SSH
SSHAA
SSHR
AFPR (LMSC)
BAC (A. J. Marchese)

SSHAA-2//mst

2 Aug 62

2060

Aug -3 1962

[illegible]/[illegible]/[illegible], [illegible]

Requirement for Vehicle Transporter

AFPRO ([illegible]/Mr. Flaherty)
Lockheed Msl & Space Co
PO Box 504
Sunnyvale Calif

1. This letter confirms our discussions on 9 and 10 July 1962

2. During the above discussions the requirement for the seventh transporter was considered marginal. While no turnaround analysis has been made for Supplement C, the present Data Table 16b Turnaround Schedule has been reviewed. There are eleven periods when seven transporters will be required.

a. Five transporters are required "on the road" for five days or more during the following months: August 1962; May, July, August, September, October and December 1963; and January, April and May 1964.

b. "On the road" time is defined by LMSC as the period of time required to load the vehicle, drive or fly to the designated installation, unload the vehicle, drive to Sunnyvale, and finally service the transporter for the next trip. Average "on the road" time obtained from logistics is three days for VAFB and two days for SCTB. A transporter remains at AFMTC until the vehicle is launched or relieved by a second transporter making a delivery. The return trip time is then considered to be three days.

c. One transporter is permanently stationed at VAFB and SCTB. The requirement for a transporter at SCTB full time may not continue, but then a transporter would have to remain with the vehicle and an increase in "on the road" time would result.

d. The Turnaround Schedule does not include any contingencies for breakdowns, accidents, major overhauls, or modifications.

e. Transportation requirements at the Sunnyvale facility have not been considered in the analysis. It is the opinion of AFSSD that the existing transporters should be put to maximum use by providing intra-building transportation. This policy will preclude the design and procurement of a new dolly in the immediate future.

f. No turnaround consideration has been given for transportation of program forward racks. These racks are growing to the point where it is logical to consider the transporter as a means of shipping.

3. Based upon the following considerations, AFSSD is of the opinion that leased vans should be used only on an emergency basis for very short and closely controlled handling:

a. There is no evidence available that a commercial van has been designed and tested in accordance with the mobility requirements of MIL-M-008090. The minimum effort which should be expended before shipping any vehicle in a van would be to compile a list of vans reported capable of meeting the vehicle requirements and then perform a stress analysis and tests in accordance with MIL-M-008090 on the shipping configuration for several of the vans. The action of a fifth wheel method of attachment between an air suspended trailer and a standard truck deserves investigation. Close control of the air suspension system is essential to consider the varying weights and CGs of items being shipped.

b. A vehicle holding dolly is required to support the vehicle in the van. When lashed down, it is an integral portion of the van. However, the dolly must be capable of absorbing all shock and vibration during the dock loading and unloading operations as well as transportation to and from the dock. A suspension system would, therefore, be required on at least one holding dolly for van use. Since loading docks are not available at each launch stand and facility area, transportation problems would result. The proposed suspension system in the holding dolly might be sufficient for road transportation, but it is considered that probably a more sophisticated dolly would be required. An alternative solution would be to unload the dolly and then reload the Agena on a LMSC transporter for road transportation. The entire system of horizontal loading into vans is not considered as safe as the present lift concept.

c. Van transportation would probably necessitate the procurement of pressurization and IRP heater vehicles. While it has been noted that a vehicle can go without pressure for seven days, a regulated source is necessary since a leak could develop and contaminate the system. An unregulated pressure source could cause damage to vehicle components and in an extreme case could cause propellant tank diaphragm reversal.

d. No requirement exists for vehicle environmental control of higher quality than provided by the present transporters. Increased environmental capability can be readily met by the present transporters should such requirements become firm. Environmental control equipment in vans would have to be qualified before a vehicle is shipped.

e. While a van may provide better physical protection than the existing transporter, no evidence is available that the present protection is insufficient.

f. A guard should be present at all times whether the vehicle is in a sealed van or on a BSC transporter.

g. Cancellation charges for the seventh transporter have not been defined. Indications are that approximately $30,000 of the $47,000 cost would be charged. Cancellation would result in an expense with absolutely no benefit.

4. After considering all of the above factors, AFSSD does not concur with the cancellation of the procurement of the seventh transporter. Therefore, it is requested that the contractor be directed to proceed with the fabrication and assembly effort of the transporter.

FOR THE COMMANDER

SIGNED

JOHN S. PLUMMER, JR
Lt Colonel, USAF
Chief, Agena AGE Division

Copy to:
SSZD (Capt Baltzell)

209

[redacted]

AUG 10 1962

[illegible] [illegible] [illegible] SS-7
SSZ SSO SSC

1. The following Technical Manuals are now in process of development for the Agena D vehicle.

a. Operational Manual. This manual will be prepared in general accordance with Specification MIL-M-9260A, and will cover the adjustment, alignment, test, hold limitations, and typical operation of the vehicle. The manual will contain test requirements; i.e., inputs and outputs at specific test points, but will not contain specific AGE application.

b. Electrical Diagram Manual. This manual will contain inter-related, inter-dependent electrical diagrams such as data flow diagrams, power distribution diagrams, pictorial (inter-component) cabling diagrams, etc.

c. Organizational Maintenance Manuals. Five manuals will be prepared, one for each functional system of the vehicle. These manuals will be prepared in general accordance with Specification MIL-M-9260A, and will contain procedures for the removal and installation of selected modules/components in a system-installed configuration. No maintenance instructions for the repair of removed modules/components will be included. The following is a breakout of the organization maintenance manuals:

(1) Guidance and Control Functional System

(2) Communications and Control Functional System

(3) Propulsion Functional System

(4) Electrical Functional System

(5) Spaceframe

d. Operation and Service Instructions Manual, Checkout Dolly. This manual will be prepared in general accordance with Specification MIL-H-7960A, and will cover operation and service procedures.

SSHR
Capt Hebert/jrn
6 August 1962

c. Field Maintenance Manuals. It is anticipated that five manuals will be prepared, one for each functional system of the vehicle. The breakout will be the same as for the organizational maintenance manuals. These manuals will be prepared in general accordance with Specifications MIL-M-25095 or MIL-M-25303, and will contain test requirements for selected modules/components, but no specific AGE application. The manuals will also contain minor repair procedures for selected modules/components in a system-removed configuration for the Command and Control and the Guidance and Control Functional Systems.

2. Subject manuals are in accordance with the provisions of AF/SSD Exhibit 61-14A.

3. To insure utilization of the above data, all programs using the Agena D vehicle should insure compatibility of their peculiar manual requirements with the Agena D manuals. This will include manuals developed for Aerospace Ground Equipment (AGE).

4. This action will provide development agencies a baseline from which to initiate action; prevent duplication; and reduce development time.

5. Program offices may receive further information and/or assistance in compliance with this policy by contacting SSC, Mr. W. T. Bookman, Bldg. 77, Ext. 3737.

SIGNED

HENRY H. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

SSH File Copy

564

308

SSEKK/H. F. Becker/[illegible]

Transfer of Agena D Program Management

AUG 13 1962

[illegible] (Maj [illegible])

1. Reference paragraph 2d -

a. The Agena D Program Management Group, was established as a unique, all Air Force Group, charged with the responsibility of developing and producing an operational vehicle on a compressed time schedule.

Under this criteria, the Systems Program Director, and the Air Force engineering personnel, established what amounted to almost a complete residency in the contractor's plant. The System Program Director and his personnel, participated with the contractor's Program Manager and his personnel, in all meetings, discussions, evaluations and decisions at the contractor's facility. Thereby was established a completely free flame of thought and experience between the two groups, with immediate reaction to each and every problem as it arose. In this kind of a relationship, the Systems Program Director was actually involved in what amounted to a continuing fact finding operation with the contractor's Program Manager.

b. The Air Force pre-negotiation position was prepared on August 6th through 9th. Briefing charts were prepared, and on 10 August the -63 contract brief was given to the SSD Procurement Staff in the morning, and to Brig Gen Powell in the afternoon. General Powell took the briefing for General Estes, and advised Colonel Fletcher, that the briefing requirement had been met, and that General Powell would advise General Estes.

SIGNED
H. F. BECKER
Contracting Officer

SSEKK/es

13 Aug 62

209.

ELLINGTON SSD [illegible]
SAFOI-3

RDY WITH CONF

GA
PLS ACK LA, NY, CCV
NY RDY
CG 436
CG 436
CG RDY
LA ARE YOU THERE
LA RDY GA PLS
INGL ARE YOU THERE

I WILL GO AHEAD

THIS IS SAFOI-3C MAJOR MOORE

FOR SAFOI NY
SAFOI LA
SAFOI CH
MAJOR ELLINGTON AT SSD

PLEASE CALL MAJOR ELLINGTON AT SSD, EXTENSION 2261 AND 2265

FOR RELEASE AT 2200 EDT 15 AUGUST, 1962

SUCCESSFUL FLIGHT OF A NEW "STANDARD" SPACE VEHICLE, WAS DISCLOSED TONIGHT BY UNDERSECRETARY OF THE AIR FORCE, DR. JOSEPH V. CHARYK, IN A SPEECH BEFORE THE SEVENTH ANNUAL SYMPOSIUM ON BALLISTIC MISSILE AND SPACE TECHNOLOGY AT THE AIR FORCE ACADEMY, COLORADO SPRINGS, COLORADO.

DR. CHARYK DESCRIBED THE NEW AGENA B AS "A PROGRAM TO SEEK A STANDARD UPPER STAGE VEHICLE FOR MANY OF OUR SPACE PROGRAMS IN THE INTERESTS OF ACHIEVING A RESPECTABLE AND VITAL RELIABILITY FIGURE."

THE AGENA, DEVELOPED IN WHAT WAS FORMERLY KNOWN AS THE DISCOVERER PROGRAM, HAS ACHIEVED MORE ORBITS THAN ANY OTHER SATELLITE IN THE WORLD. THE FIRST AGENA WAS ORBITED BY THE AIR FORCE ATOP A MODIFIED THOR IRBM, FEBRUARY 28, 1959.

"WE HAVE NOW LAUNCHED OVER TWO HUNDRED EARTH SATELLITES, OR ALMOST FIFTEEN TIMES AS MANY AS THE SOVIET UNION," DR. CHARYK STATED. "OUR SUCCESS RECORD HAS GONE FROM A LOW POINT OF TWELVE FAILURES OUT OF SEVENTEEN TRIES IN 1958, THROUGH ELEVEN FAILURES IN THIRTY-NINE TRIES IN 1961, TO A RECORD OF ONLY ONE FAILURE IN SIXTEEN ATTEMPTS."

IN POINTING OUT THE ACCELERATED DEVELOPMENT AND PRODUCTION OF THE AGENA D, THE UNDERSECRETARY RECALLED THAT "THE INITIAL ESTIMATE IN THE [illegible] FALL OF 1961 WAS THAT THE BEST POSSIBLE SCHEDULE WOULD RESULT IN [illegible] INITIAL VEHICLE DELIVERY IN NOVEMBER OF 1962, WITH INITIAL LAUNCH [illegible] JANUARY OF 1963...........AMAZINGLY ENOUGH, AFTER A THOROUGH SCRUTINY OF THE PROGRAM, A NEW SCHEDULE WAS EVOLVED CALLING FOR INITIAL [illegible] DELIVERY IN APRIL 1962 AND INITIAL LAUNCH IN JUNE 1962, A TELESCOPING BY ABOUT A FACTOR OF TWO...........BOTH OF THE DATES WERE MET AND THE FLIGHTS TO DATE OF THE NEW VEHICLE HAVE BEEN SUCCESSFUL."

THE AGENA D, A LIQUID-FUELED UPPER STAGE VEHICLE CAPABLE OF ATTITUDE CONTROL AND RESTART OF ITS ENGINE IN SPACE, IS THE LATEST MEMBER OF THE FAMILY OF AGENA SATELLITES WHICH ALSO INCLUDES THE "A" AND "B" MODELS. SINCE ITS FIRST LAUNCH AND SUCCESSFUL ORBIT IN FEBRUARY, 1959, APPROXIMATELY 75 PER CENT OF THE AGENAS HAVE BEEN SUCCESSFULLY PLACED IN ORBIT7

NOTE----------------LAST PARAGRAPH IS NOT IN CHARYK SPEECH. ALSO, FYI, A LAYMAN"S EXPLANATION OF DIFFERENCE BETWEEN A, B AND D MODELS IS THIS--------A AND BE HAS PAYLOAD INTEGRATED. D MODEL IS BARE MODEL, SUITABLE FOR A VARIETY OF MISSIONS. THE NEW AGENA D IS COMPLETE AS IT ROLLS OFF ASSEMBLY LINES, EXCEPT FOR REQUIRED PAYLOAD AND "ACCESSORY" MODIFICATIONS. THESE MODIFICATIONS WILL BE ACCOMPLISHED IN MUCH THE SAME MANNER AS AN AIR CONDITIONER OR RADIO IS ADDED TO A STANDARD MODEL CAR.

END SAFOI-3C MAJOR THOS L. MCCORMK

THI IS SAFOI LA PARTS OF ABOVE MSG GARBLED CAN YOU REPEAT
LAST LINE OF PAR 1 .LAST LINE OF PAR 2

LAST LINE OF PAR 1 READS-----------------
MIN PLS D CORRECTION LAST LINE OF PAR 2 PLS

GMXV ACK 2

210

AUG 16 1962

SSEGD/Lt Briones/675-3792, 3915

Auto-DRAPE Orientation

SSZ
SSZM
SSZMB
SSZH
SSZD
SSDO
[redacted]
SSVR
SSZX
SSZI
AFPRO LMSC Sunnyvale
6595 Aerospace Test Wg

1. A demonstration run of the Automatic Data Reduction and Processing Equipment (Auto-DRAPE) will be held at Building 104, LMSC, Sunnyvale on 28 August 1962 at 1100 hours for the purpose of indoctrinating effected Air Force personnel on the operation and application of this equipment. Auto-DRAPE makes real time GO-NO GO evaluation of one link of FM/FM or PAM telemetry data and provides real time printout of test results during preliminary or final Agena systems tests. Its operational advantages result from the reduction of the lengthy and costly delays for manual telemetry data reduction and evaluation after Agena systems tests.

2. In order to derive the maximum benefit from this equipment, it is imperative that program office personnel, especially those who will be involved in Agena Vehicle buyoffs, become familiar with the operation of the Auto-DRAPE system. For this reason it is requested that all Agena Programs make every effort to have cognizant personnel present for this demonstration, which will consist of a brief classroom session followed by a live run, schedule permitting, on a NASA vehicle. If a real time run is not possible on this day, a telemetry tape will be used for the Auto-DRAPE demonstration.

3. The person to contact at Building 104 on 28 August is Frank Morgan, extension 26529. SSEGD will provide any additional technical information required on the Auto-DRAPE system.

4. It is requested that each addressee submit the names of persons who will attend to SSEGD (R&D extension 3915).

SIGNED

JOHN S. PLUMMER, JR
Lt Colonel, USAF
Chief, Agena AGE Division

Copy to
LMSC SV (Mr. F. Morgan)

Lt Briones/esn

15 Aug 62

211

[redacted]

1. To provide a concrete basis for the establishment of Agena-D prelaunch conditions for using program flight mission planning, this office requires documentation of the critical conditions. The list shown below in paragraph 2 is not intended to be complete, but should be used as a minimum guide. For each stipulation and condition described, LMSC should provide adequate background and referenced data. Where the primary basis is one of engineering judgment, the contributing factors should be enumerated.

2. The following are typical of Agena-D pre-launch conditions which require identification:

a. Maximum time between functionals of engine, pneumatics, hydraulics, and other mechanical devices with stipulations as to conditions which must be maintained, e.g. vehicle mating, temperature limits, etc, and indication as to whether functionals can be accomplished in the mated condition.

b. Maximum time between checkout of electrical and electronic components with stipulation as to conditions which must be maintained and indication as to whether checkout can be accomplished in the mated condition.

c. Maximum time with propellants loaded

1) with propellant isolation valves upstream of engine, engine dry.

2) without propellant isolation valves, propellant loaded up to engine valves.

d. Vehicle servicing (include each significant component separately) required after vehicle has exceeded propellant loaded time.

3. [illegible] is requested to establish a coordinated position on the above between Agena D and Central Engineering and to submit the results to SSHA by 14 September 1962.

SIGNED

EDWARD F. BLUM, Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

Cys to: AFPRO (LMSC)
SSHAA
L. R. Viggiano, 62-44

SSEAA-2/nst

16 Aug 62

212

AUG 24 1962

[redacted]

[redacted]

GIBLE

[redacted]

1. References:

a. SSBA ltr to BAC, R. Keller, dtd 25 Jul 62, same subject.

b. BAC ltr AO.5 7935 to SSBAA, dtd 14 Aug 62, same subject.

2. The BAC reply (ref.b.) to SSD letter (ref a.) requesting a statement of mission requirements was received within the requested time. The preliminary information transmitted will be of value for forthcoming decisions in the XLR81-BA-13 (Gemini) engine development program.

3. BAC is requested to report to SSD the status and results of continuing analysis of mission performance requirements. Special consideration should be given to identification of critical performance parameter(s) for sensitive missions, viz. [redacted] Mariner and Ranger. Attention should be given to evaluating which "start time" is most crucial, e.g. time to 90% thrust or time to maximum thrust gradient, and to a more accurate estimate of mission requirements. The requirement for ± 0.3 sec to 90 percent thrust given for the first three of the above missions in ref b. seems to be the same as the observed variation of the present XLR81-BA-9 and -11 engines.

4. Other system considerations which do not appear to have been covered include:

a. Interactions between the time setting for opening of the motoroperated valve of the oxidizer pressurization system and the variability in engine start time (potential problems are tank burst or diaphragm reversal) and

8. Interactions between the [illegible] start transient characteristics and the [illegible] actuator system being developed for Agena D. It is recognized that the latter consideration is preliminary, but it should be taken into account in the [illegible] actuator development.

A summary of available results should be submitted to arrive at SSD by 17 September 1962.

SIGNED

[illegible] F. BLUM, Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

Copies to:
LMSC, L. R. Viggiano (62-44)
LMSC, E. A. Dunlap (62-43)

SSHAA-2/jes

24 August 62

913

PROGRAM S-01A

AUGUST 1962

STATUS REPORT ON
AGENA D

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20 August 1962

FOREWORD

In conformance with directives received from Hq USAF and in recognition of the urgency attached to the satisfactory accomplishment of the accelerated Agena D Program, certain extra-ordinary and unusual technical and contractual relationships were established with the Lockheed Missiles & Space Company, Sunnyvale, California. It is the purpose of this report to record these relationships, to analyze the effectiveness of this unique management approach in light of the results obtained to date and to present summary conclusions.

Henry M. Fletcher, Jr.

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

INTRODUCTION

Early in 1961, increased activity and mounting costs of space programs forced recognition by AFSSD of the necessity for reducing cost and increasing flexibility through standardization of the Agena stage. In order to establish the technical feasibility of this approach, on 30 June 61, the Agena Standardization Study was authorized. The results of this study were favorable and after approval by Hq USAF and DOD, on 25 August 61 the U. S. Air Force awarded Contract AF 04(695)-21 to the Lockheed Missiles and Space Company for the design, development, and production of twelve Agena D satellite vehicles which were to be standard in nature and capable of being used with a minimum degree of change in various satellite programs. First launch was scheduled for January 1963.

On 17 October 61 the Honorable Dr. Joseph V. Charyk, Under Secretary of the Air Force, appointed a special committee chaired by Mr. Clarence L. Johnson to investigate ways and means of providing a more reliable Agena on an accelerated schedule. This committee reviewed the approach proposed under the standard Agena concept and the capacity of the Lockheed Missiles and Space Company for accelerating the approved schedule. It was the conclusion of the committee that a more reliable standard Agena could be produced to support a June 62 first launch provided that extraordinary and unusual technical and contractual relationships were established and rigorously adhered to by both the Contractor and the Government. The management principles proposed by the Johnson Committee were reviewed by Hq USAF and approved as the basis for program management. In general, these ground rules apply a streamlined AF/Contractor management concept and include a DX priority, reduction in formal procedures, exclusion area in which to perform the work, and extraordinary program management channels. To insure compliance by both parties, these 'ground rules' were actually made a preamble to the contractual work statement for the accelerated Agena D program.

The prime objectives of the accelerated Agena D program are:

1. To produce a more reliable standardized basic vehicle capable of performing essential ascent and/or orbital functions derived from common mission requirements of the following programs: [redacted]n accord with the accelerated schedule and within the allocated budget.

2. To provide a fixed-price procurement source for Agena D vehicles with a production capacity of five vehicles per month.

I. CONTRACTS

A. Background. In compliance with guidance received from Hq USAF (Reference Hq USAF messages (1) AFSDC-F 82350 dated

30 Nov 61, (2) AFSPM 80779 dated 22 Nov 61, and (3) AFSSC-EQ 90915 dated 5 Jan 62) two separate contracts have been established to accomplish the stated objectives of the accelerated Agena D program. The basic development/engineering contract (AF 04(695)-21) provides the necessary engineering capability and industrial base for the design, development, fabrication, assembly, qualification, and test of twelve prototype Agena D flight vehicles with initial delivery to support a June 1962 first launch. This contract also provides as a primary objective, creation of the 'Procurement Package' to permit a fixed price procurement and the creation of a capability for production at the rate of five Agena D vehicles per month. The follow-on production contract (AF 04(695)-68) has been established to support an initial delivery of 39 Agena D vehicles with an initial production rate established as four vehicles per month.

B. Development/Engineering Contract

1. General. The Development/Engineering Contract (AF 04(695)-21) was written originally to support the standard Agena program authorized on 25 August 61. In order to accomplish the objectives of the acceleration, however, the management approach to this contract was completely reoriented on 7 November 61. In essence, the Lockheed Missiles and Space Company, in response to Air Force guidance, completely reoriented the organization responsible for management of the vehicle design, fabrication,

assembly, and test which was in being to support the production of the Agena B. From the outset it was recognized that it would be necessary to assign one individual across-the-board responsibility for all phases of the Agena D program. Accordingly, LMSC proposed the creation of what might be considered a company within a company, establishing the Agena D program office having complete Agena D responsibilities and reporting directly to the Vice President and General Manager, Space Systems. This organizational approach was dramatic and effective. As much as any other single factor, it has been responsible for the quick response time which has been demonstrated in the performance of LMSC to date. The basic R&D contract was definitized in such a manner that it encompassed all of the requirements for the complete redesign and qualification of the Agena D vehicle. It authorizes the fabrication and use of development tools such as the Propulsion Test Vehicle which was utilized to proof test the orifice pressurization system and the dual start capability of the rocket engine, the Structural Test Vehicles which were utilized to concurrently qualify the forward equipment rack and the aft structure, and the Thermal Test Vehicle which was used to verify environmental acceptability of the design. Additionally, a Functional Test Mockup and necessary wood mockups were furnished. In addition, twelve prototype flight articles will be produced, qualified, and checked out under this contract, and provision has been made for the production of a Development Test Vehicle. The DTV will serve now and in the future as a means of installing, qualifying, and where necessary, hot firing, program peculiar and advanced development modifications in support of all programs utilizing the Agena D stage. In addition to the above, it is a requirement of the -21 contract that a manufacturing production capability be established which will permit production of Agena D vehicles at the rate of five vehicles per month on a fixed price contract.

2. Incentive Features of the Contract.

a. In conformance with DOD policy, it was established from the outset of the Agena D program that the research and development phase was to be contracted as a Cost Plus Incentive Fee contract.

b. The features of the negotiated incentive formula for computation of fee are as follows:

1. Division of Fee: Equal weight will be given to cost, schedule, and performance (1/3) each.

2. Costs: Based upon a target fee rate of 7% for cost and a contract target cost of $31, 713, 746, the Contractor will receive $739, 987 if the final contract cost is $31, 713, 746. If the final cost of the contract is 5% more than the target price, the Contractor's fee will be reduced by $31, 714; if 10% more, it will be reduced by $63, 428; if 15% more, it will be reduced by $116, 283

and checked out under this contract, and provision has been made for the production of a Development Test Vehicle. The DTV will serve now and in the future as a means of installing, qualifying, and where necessary, hot firing, program peculiar and advanced development modifications in support of all programs utilizing the Agena D stage. In addition to the above, it is a requirement of the -21 contract that a manufacturing production capability be established which will permit production of Agena D vehicles at the rate of five vehicles per month on a fixed price contract.

2. Incentive Features of the Contract.

a. In conformance with DOD policy, it was established from the outset of the Agena D program that the research and development phase was to be contracted as a Cost Plus Incentive Fee contract.

b. The features of the negotiated incentive formula for computation of fee are as follows:

1. Division of Fee: Equal weight will be given to cost, schedule, and performance (1/3) each.

[redacted]

[redacted]

4. **Performance**: One of the most significant and unique features of the negotiated incentive fee relates to the payment of the 1/3 fee based upon performance. The Contractor proposed and the Air Force accepted the principle that the Air Force would unilaterally rate the Contractor's performance. LMSC officials

[redacted]

An Air Force board composed of representatives of the using programs and the Agena D Program Office will be appointed by the Commander, AFSSD, to rate the Contractor's performance within 30 days of the launch of the twelfth prototype vehicle. The board will use the following criteria: 30 points for (1) Reliability, (2) Program Adaptability, (3) Ease of Checkout; 30 points for (1) Weight of Vehicle, (2) Ascent Performance.

Additionally, it has been mutually agreed between the Contractor and the Agena D Program Office that should failure to qualify all components of the Agena D vehicle prior to flight of each of the prototype vehicles delay the flight of any vehicle, a suitable adjustment of the performance fee will be made. This will be the first time that the Agena vehicle will be contractually required to have all components qualified for flight prior to flight.

C. Production Contract

1. General

a. Contract AF 04(695)-68 is intended to be a production contract, whereunder fixed-price redeterminable procurement will be accomplished on the basis of a procurement package developed under Contract AF 04(695)-21. This procurement package consists of a detail specification, an acceptance test specification, and the required vehicle drawings.

b. It is planned that the management of the -68 contract will be in compliance with standard Air Force production procurement regulations and that although it will not necessarily encompass all of the military specifications associated with standard Air Force procurement, it will satisfy completely the intent of those specifications.

c. This production contract will utilize directly the engineering output of Contract AF 04(695)-21. There will not be a redesign for production required since the AF 04(695)-21 contract will result in documentation of a qualified production configuration. This configuration will be considered a frozen configuration, and configuration control in accordance with AFSCM 375-1 will be enforced. Changes to the configuration will only be made with Air Force concurrence and will require contractual amendment to effect any changes.

D. Advanced Development Contract AF 04(695)-191.

1. How it relates to the -21 and -68 contracts. As stated above, the -21 contract provided twelve vehicles, but more important it provided for the technical effort necessary for the redesign, development and qualifying of the Agena into a standard ascent vehicle -- the Agena D. The technical effort under the -21 contract has already been significantly reduced and will be completely phased out by November 1962. Inasmuch as the -68 contract buys "chinese copies" of the Agena D developed under the -21 contract, no provision for further redesign and development will be provided under the -68 contract. In fact, it has been specifically excluded in an attempt to preclude changes and increase reliability and reduce vehicle cost. The production build up occurs concurrently with the development effort under the basic contract, and without an Advanced Development Contract an engineering void will occur in the LMSC Agena D organization if all engineering effort is allowed to be terminated at the conclusion of the development/engineering (-21) contract on 30 November 62. It is recognized that deficiencies will be discovered for which additional engineering effort and possibly redesign will be required; state-of-art advancements must be adapted to the Agena D and qualified prior to being incorporated into the Agena D production.

This is where the "follow on R&D" or advanced development contract fits into the Agena plan. An appropriate level of effort will be provided under this contract to maintain the required level of engineering support to the using programs.

II. PROGRAM GROUND RULES

A. Ground Rules. To accomplish the Agena D program the Johnson Committee basic ground rules have been implemented and governed the development of the Agena D. In general, these ground rules apply a streamlined AF/Contractor management concept and include a DX priority, reduction in formal procedures, inclosed area, and extraordinary program management channels. These ground rules are as follows:

1. A DX priority is assigned to the Agena D Program.

2. The engineering system shall be simplified, requiring only those drawings essential to tool, build and service the vehicle.

3. 50% final configuration freeze shall be accomplished by 1 December 1961.

4. Engineering and management level personnel for Program S-01A shall be located in an exclusion area immediately adjacent to the tooling and manufacturing area.

5. A rapid drawing release system (24 hours maximum) from the project engineer's approval to the manufacturing group shall be established.

6. Funding shall be adequate and timely.

7. Technical directive meetings involving large groups shall not be required. Air Force personnel shall work in close liaison with the LMSC Project Engineer so formal meetings are not required.

8. Reasonable overtime will be approved. After-the-fact approval is not precluded. (Pursuant to clause A-37 of the contract.)

9. Air Force approval of vendor selection shall be furnished on-the-spot at Sunnyvale. When single source procurement is necessary, justification of such action will be kept on file.

10. Tooling shall be of the simplest type that will achieve interchangeability as stated in the basic Agena D specification. No tool drawings or outside approval of tooling will be required.

11. Interchangeability on early Agena D's will be limited to major structural and equipment items. Doors, for instance, may require trim to fit.

12. The AF Director, Program S-01A, and the LMSC Program S-01A Director shall jointly review the specification problem and agree at the configuration conference to reduce the number involved to the minimum compatible with the minimum requirements for the construction of the Agena D.

III. ORGANIZATION

A. SSD Program Office. A small streamlined Air Force office organization was established. This office consisted of eight qualified and experienced personnel that were assigned with primary duty to the Agena D program. This organization was configured to accomplish both contract administration and engineering tasks associated with the development of the Agena D, reporting directly to SSD command level. The function of each organizational element is as follows:

1. Director S-01A - Directly responsible for the overall Air Force management, (plans, organizes, coordinates, controls and directs), all efforts of functional agencies and industries participating in the S-01A Program. Reports directly to the SSD Commander.

2. Deputy for Programming, Procurement and Production - Responsible to the Director, S-01A Program, for programming, procurement and production of the Agena D and its supporting AGE/STE.

a. Programming Branch - Responsible for establishing Agena D program requirements based upon the official Air Force Integrated Launch Schedules published by SSD; providing budget information to program offices pertaining to fund requirements for Program S-01A and for availability of funds for release to the contractor.

b. Procurement and Production Branch - Responsible for all aspects of the preparation, negotiation, definitization, release and management of contracts for Agena D, and responsible for production schedules for Agena D vehicles, optional equipment and spare parts;

for Agena D production progress surveillance; for facilities, inspection and acceptance.

3. Assistant to Director for Engineering - Responsible to the Director S-01A Program for planning, implementing, and surveillance over the engineering of the Agena D and its supporting AGE/STE.

a. Aerospace Ground Equipment Branch - Responsible for the Air Force management of contractor's engineering efforts during the design, development and test of Agena D Aerospace ground equipment and special test equipment to insure the technical adequacy and timely delivery of the equipment to support Air Force programs. Also responsible that vehicle test philosophy and procedures and the checkout equipment are compatible and will, during vehicle test, provide adequate technical data to permit acceptance of the Agena D vehicle.

b. Electronics Branch - Responsible for the Air Force management of contractor engineering efforts during the design, development, and test of Agena D guidance and control and electrical power requirements to insure the technical adequacy and timely delivery of the equipment to support Air Force programs.

c. Astro Vehicle Branch - Responsible for the Air Force management of contractor engineering efforts during the design, development, and test of Agena D structures and propulsion systems to insure the technical adequacy and timely delivery of the equipment to support Air Force programs.

B. Relationship with AFPR

1. In recognition of the urgency attached to the satisfactory

accomplishment of the S-01A program, it was mutually understood that extraordinary and unusual technical and contractual relationships were required. Consistent with the principle that the design, manufacture, and test of the end article within the critical program schedule could only be achieved through an unencumbered working relationship of engineering, procurement, inspection, manufacturing, logistics and support personnel, both the Air Force and LMSC Program Directors have authority to make 'on-the-spot' decisions both technical and contractual. With respect to contract administration, specifically identified tasks were monitored by selected individuals as set forth in a Memorandum of Understanding between the SPD and the AFPR.

2. The LMSC engineering and management personnel were located in an exclusion area in Building 151, immediately adjacent to the final assembly and checkout. The S-01A Air Force Program Office was located adjacent to this Agena D area in an exclusion area. Access to this Air Force office is available to using program personnel from both LMSC and the Air Force without interfering with the LMSC Agena D effort. Liaison with the LMSC Agena D activity, by and on behalf of the Air Force and contractor personnel during the contract period, is confined to a limited number of designated personnel who have free access to the entire activity at all times. Air Force access is restricted to the S-01A Program Office personnel and designated personnel from the AFPR Office. No other Air Force personnel, other than those specifically approved by the Air Force or LMSC Program Director, are permitted access to the Agena D exclusion area.

3. The resources of the Air Force Plant Representative Office were utilized on a streamlined basis in carrying out contract administration functions to assure satisfactory execution of the Agena D Program. Acting for and under the control of the Director, Program S-01A, the AFPR made decisions relative to the S-01A Program which were binding upon the contractor. Selected individuals from the AFPRO have been designated contact personnel for their responsible functional areas. These designated individuals have free access to USAF Program S-01A personnel and access to the exclusion area as necessary to perform the task assigned.

C. LMSC Management Organization

1. The contractor has placed the full support of the Corporation behind the Agena D Program. Within the LMSC Space Systems Division, he has established the Agena D Directorate, with broad and all-encompassing authority. This authority includes full control over operations which are normally organized on a plant-wide functional basis, including manufacturing. The LMSC Agena D Program Director's organization and his functions and responsibilities are as follows:

a. Basic Objectives: Develop, design and manufacture the Agena D vehicle, establishing management controls over all aspects of the Agena D program contract.

b. Functions and Responsibilities

(1) Serve as the principal representative of Space Systems Vice President and General Manager with the customer in negotiations and commitments for the Agena D Program.

(2) Perform the complete systems engineering and reliability function for the Agena D Program, including the direction and control of all systems design, flight sciences, and test planning.

(3) Perform all vehicle engineering for the Agena D Program, including all subsystem design for airframe and installations, propulsion, internal electrical systems, guidance and control, and selected communications and control equipment.

(4) Design or provide the technical direction for the design of Agena D checkout equipment.

(5) Perform Agena D systems tests.

(6) Manufacture of the Agena D vehicle, including electrical, structure, and final assembly in accordance with Agena D drawings and specifications. Provide production planning, tooling, and production control. Direct and control any manufacturing services required by the program.

(7) Plan, establish, and maintain an effective inspection system to provide compliance with the contractual and design requirements of the Agena D program.

(8) Establish a procurement system to provide for the analysis of material requirements, the procurement of material, control of inventories, and the receiving, storing, and distribution of incoming shipments.

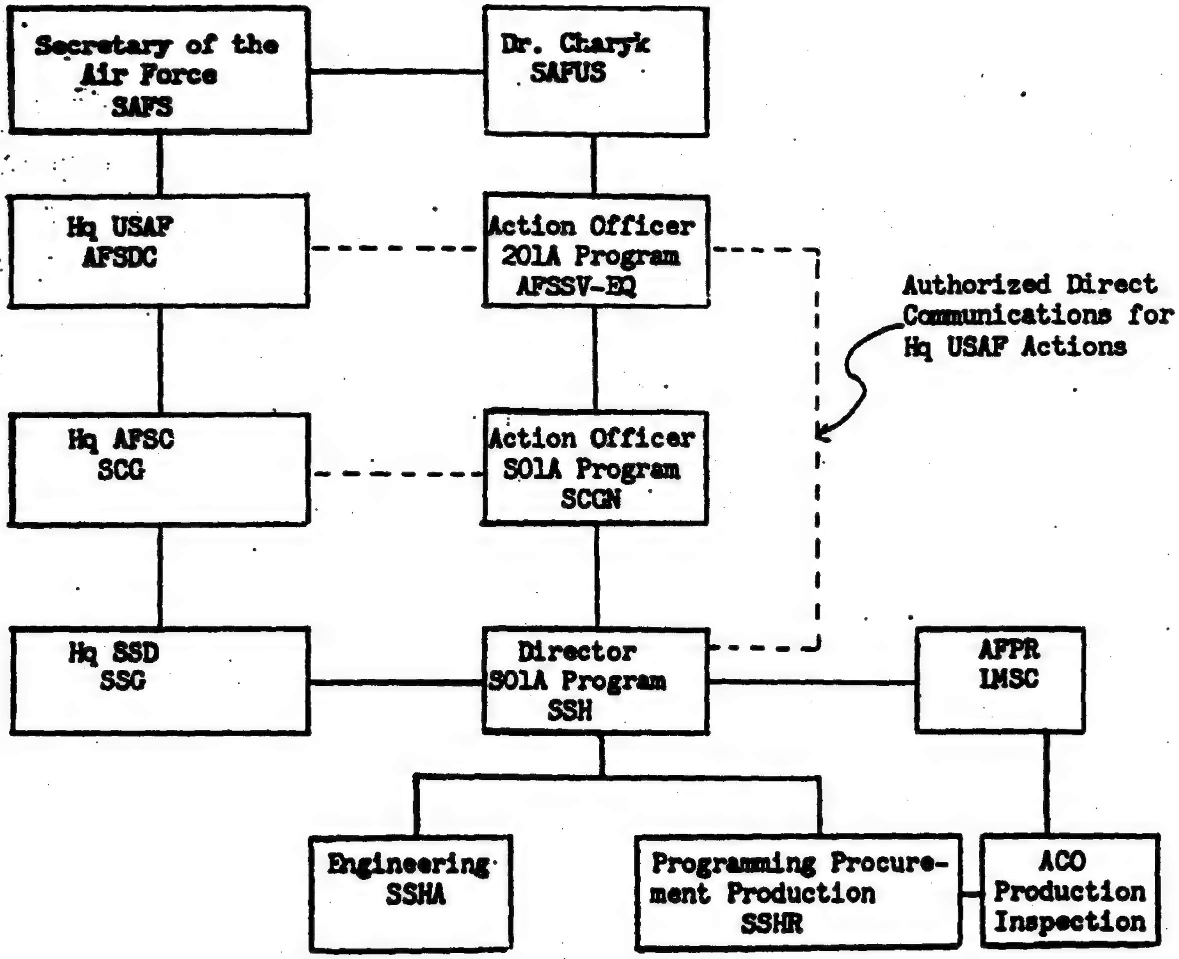
(9) Establish and maintain a management control system encompassing both program controls and administrative controls for the Agena D Program.

2. In addition to the foregoing responsibilities which have been delineated and agreed upon, the following were established as firm requirements of LMSC relative to the management of the Agena D Program.

a. The Contractor shall operate and maintain a logistics system which will insure the availability of spare parts and the repair of generated reparables.

b. The accounting system will provide for the segregation and reporting of basic vehicle development, product improvement, and logistics costs.

D. Command Channels


Secretary of the Air Force SAFS
Dr. Charyk SAFUS
Hq USAF AFSDC
Action Officer 201A Program AFSSV-EQ
Authorized Direct Communications for Hq USAF Actions
Hq AFSC SCG
Action Officer S01A Program SCGN
Hq SSD SSG
Director S01A Program SSH
AFPR LMSC
Engineering SSHA
Programming Procurement Production SSHR
ACO Production Inspection

IV. MANAGEMENT TECHNIQUES

A. Cost Management

1. **LMSC Internal Budgets.** The Air Force has established the incentive features of the contract in an effort to control cost and schedules and to insure performance. The effectiveness of the incentive features of the contract pertaining to cost immediately became evident when the Contractor established his Program Cost Accounting System. In order to delegate and fix management responsibility and authority, each of the major department heads, i.e., Systems Engineering and Reliability, Vehicle Engineering, Manufacturing, Inspection, Procurement, and Administration have been given individual operating budgets and overtime allocation. These budgets are reviewed weekly by the LMSC and Air Force Program Directors and are tracked against individual organizational allocations and master program milestones that should permit the Contractor to stay within costs allocated to the program. Experience to date has indicated that this method of high-lighting and controlling cost has permitted the Program Directors timely access to information which forewarns of potential overruns. This information has permitted corrective action to be taken in sufficient time to keep expenditures within the budget. It is significant to note that at this point in the program, approximately 80% of the costs have been incurred and program costs are still tracking an expenditure curve which will result in the Contractor completing the contract at the target cost established during the negotiation.

2. Agena D Accounting System. In early December 1961 it became necessary for the Agena D Program Office to cause the Contractor to establish a special accounting system for the Agena D program which would satisfy the Air Force Auditor General requirements for the CPIF contract. This has been accomplished to the satisfaction of the Auditor General and should permit the most accurate cost accumulation-vs-vehicle production thus far achieved at LMSC Sunnyvale. The main problem with the pre-Agena D accounting system at LMSC related to the pool charges, which were utilized to fund common or centralized facilities and services. It had been the approved technique to pro-rate these costs among appropriate customer contracts. In large measure, this accounting system limitation has been overcome by the straight line organization created by LMSC for the Agena D program and the fact that the LMSC Program Director has been able to negotiate with the remainder of the Corporation for services provided outside his control. The cost accounting system which has been established was mutually evolved among the Contractor, AFPRO, local representatives of the Auditor General's Office, and the Air Force Program Office. The breakdown of the accounting system is in sufficient detail such that the problem of cost analysis for the follow-on contract should be measurably reduced from that of previous development contracts negotiated with the Lockheed Missiles and Space Company.

3. Air Force Auditor General Representative. In order to insure Contractor compliance with the agreed procedures and the

proper interpretation of the cost accounting system to support the CPIF contract, the Agena D Program Director requested and was assigned early in the program, a full time representative of the Air Force Auditor General's Office as a member of the Agena D staff. This individual has had access to all cost information as it is accrued and is in a position to keep the Auditor General, AFPR, and Program Director informed of the Contractor's compliance with the agreed-to procedures and his current fiscal status at all times. In addition, at the request of the AFPRO, ACO, PCO, and Program Director, he has conducted special investigations and studies as required.

B. Program Control Channels.

1. In order to avoid the necessity of special reports and briefings by the Contractor to the Air Force Program Office during the course of the accelerated program, the LMSC Program Director extended to the Air Force Program Director and his staff an invitation to attend the weekly internal Lockheed program management meetings. This has become the accepted management tool of both the LMSC and Air Force Program Directors for obtaining a weekly status report on all features of the program. The 'pipeline meeting', as it is called, is held every Tuesday morning at 0800 hours and consists of a detailed discussion of the following:

a. Action items carried over from previous meetings.

b. Significant accomplishments since last meeting.

c. Problems which have arisen during the reporting period.

d. Items which must be accomplished to stay on schedule and within costs.

e. Review of technical status.

f. Review of subcontractor procurement status.

g. Review of logistic status.

h. Review of qualification program.

i. Financial and manpower status.

The attendees at the meeting consist of the members of the LMSC Program staff through management division level and such additional representation as may be required to adequately answer questions in connection with presentations which are to be given. The milestone technique of program control is utilized with every major segment of the program receiving as detailed review as is required. The presence of the Air Force Program Office at this internal LMSC management meeting has been a unique advantage for the Program staff for it has permitted the Air Force team to participate in the decision making process for all major issues that have arisen to date. Normally the Lockheed Program Director runs the meeting and gives the necessary administrative and technical direction to his staff in a manner that might be considered more appropriate if Air Force representatives were not present. It is common practice for the LMSC staff and the Air Force program team to present technical and administrative issues and differences that require mutual decision for resolution. By this technique, it has been possible for the Air Force Program Director and the LMSC Program Director to resolve differences on the spot and thereby, expedite the program objectives.

C. Technical Management Interface

1. In establishing the accelerated S-01A Program, two of the Johnson Committee ground rules had a marked effect on the internal LMSC exchange of technical information and the AF/LMSC technical working relationships. These were as follows:

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a. "Engineering personnel shall be located in an enclosed area immediately adjacent to the tooling and manufacturing area.

b. "Technical directive meetings involving large groups shall not be required. Air Force personnel shall work in close liaison with the LMSC Project Engineer so formal meetings are not required."

2. The LMSC Agena D engineering staff was selected from the existing, experienced LMSC engineering personnel. This staff was moved to an enclosed area which required a special pass to obtain access. These measures were taken to permit the proper concentration of effort and to eliminate interruption by Non-Agena D personnel. A special liaison group was established to provide information to the various using programs.

3. It was realized that the normal Air Force technical direction and monitoring efforts would be ineffectual and time consuming for such a rapidly moving program. The Johnson Committee rule, number two, was written to require a type of modified operation. A team of highly qualified Air Force officers from Air Force Space Systems

Division were assigned the responsibility of directing this effort. This team spent a major portion of their time in residence at LMSC (approximately three days per week) and worked very closely with the LMSC engineering staff. Members of the team attended a large number of the technical and policy meetings, assisted in the discussions and in arriving at decisions. By being present during these formative discussions, there were minimum delays in obtaining Air Force approvals. Personal contact with all engineering personnel was fostered. The Air Force had complete access to LMSC internal correspondence, calculations and engineering data which was a substantial assistance in monitoring the development program.

4. Although the S-01A Program personnel spent a major portion of their time at LMSC, the program team was normally split between their AFSSD and LMSC offices. To eliminate delays, a direct phone line was installed between the two offices. This provided a rapid means of communication and has proved very effective. Formal correspondence and paperwork has been kept to a minimum. Internal LMSC engineering reports, design reviews and analysis have been used throughout the program. Formal agreements have been recorded as memorandum of understanding or memorandum for the file.

D. Vehicle Acceptance Procedures

1. The team concept of acceptance as used on Agena Bs has been instituted for the Agena Ds. It is planned that after the detail

specification, test specification, and test procedures have been approved and thoroughly tried out, the acceptance of vehicles will become the responsibility of the Air Force Plant Representative. In the interim, however, the Acceptance Team currently consists of three members of the AFSSD S-01A Directorate, one of whom serves as Chairman, two members from the Air Force Plant Representative Office (Quality Assurance), a member from the Air Force using program office, and a member from the LMSC using Program office.

2. Acceptability of the vehicle for delivery to the Government is determined by review of the test results during the assembly process at the rack and module level, and during final system test, and through physical inspection of the vehicle. A final integrated system test is made prior to acceptance of the vehicle. This test run simulates a representative ascent mission and exercises all equipment to be used in the vehicle. The data is then processed and made available for review by the Acceptance Team. An acceptance data table (Table 5) is completed for ease of review. Also, the vehicle log is provided which gives a complete story of the vehicle from beginning of assembly until it is offered to the Air Force for acçeptance. After completion of the system test and analysis of the data, the vehicle is thoroughly inspected by the LMSC inspection organization, which is followed by the LMSC engineering staff inspection. After working off all discrepancies, it is turned over to the Air Force for physical inspection. The engineering members of the Acceptance Team and the AFPR (QA) Inspectors then inspect the vehicle.

3. After physical inspection of the vehicle and review of the data, a formal acceptance meeting is held. At that time, an LMSC letter certifying the vehicle's acceptability to applicable design and specification is provided, signed by the LMSC Agena D Program Director. The meeting is held primarily to provide answers to the Air Force on any problems, omissions, discrepancies that have been uncovered. The acceptability of the vehicle to the terms of the contract is determined at this time. Should the vehicle be unacceptable, a detailed listing of discrepancies is formally provided to LMSC for necessary corrective action and subsequent reoffer of the vehicle. The contractual aspects of the incentive fee pertaining to schedules has been formally documented by memorandum between the LMSC Program Director and the Air Force Program Director.

V. SUMMARY CONCLUSIONS

A. Unique Accomplishments. Following is a listing of significant 'firsts' which will be accomplished under the Agena D contracts:

a. First CPIF contract between LMSC and the Air Force.

b. First CPIF contract to be negotiated in which the performance fee aspects are adjudged unilaterally by a board of Air Force officers upon completion of the flight test program.

c. First AFSSD procurement of spares to a definitive list.

d. First development program in which all components will have been formally qualified for flight before first flight.

e. First 'procurement package' for a space vehicle.

f. First program to incorporate semi-automatic checkout equipment in system test.

g. First 'fixed price' procurement of a space vehicle.

h. First formal Configuration Control Board established for a space program.

B. Lessons Learned. The following may be cited as lessons learned to date through the CPIF development/engineering contract:

a. The incentive features of the contract coupled with the willing acceptance of the challenge of the accelerated schedule by the Contractor, in large measure have been responsible for the high motivation and unusual productivity of the Agena D program.

b. Without question, the incentive features of the contract have contributed to increased emphasis on cost control by the contractor and resulted in all scheduled deliveries being met thus far.

c. The reimbursable concept of funding the production contracts for boosters and stages is highly endorsed for it permits an orderly production flow to be established, economical lot buys and fixed price contracts to be negotiated, configuration control to be effectively exercised, costs to be held down and, in general, better management to be exercised.

d. The paradox of the relaxed formal documentation requirements and "skunk-works" approach of the accelerated program to the stringent controls necessary for effective management of a CPIF contract make it difficult for the Air Force Program Director to satisfy both objectives without compromise. In large measure, through the close working relationship and cooperation of both parties, it is believed that this has been accomplished.

e. Future CPIF contracts would be facilitated - in the negotiation phase - through the use of a more definitive work statement than was prepared for the Agena D program.

f. The accounting system evolved for the CPIF contract indirectly should result in more accurate costing for all LMSC programs.

g. It has been established that through a close working relationship with the Contractor, it is possible to eliminate the requirement for many reports, meetings, etc., and, in general, reduce documentation. This has not been accomplished without personal inconvenience to members of the Air Force program team who routinely spend three to five days per week on TDY. Should other high priority programs adopt the Agena D

approach, it is recommended that PCS be considered as a possible means of eliminating this objectionable aspect.

h. Configuration Control is a mandatory prerequisite to effective standardization of design and should enhance reliability and quality control.

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ROUTINE
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SSD LOS ANGELES CALIF

LOCKHEED ACFT CORP MSL & SPACE CO SUNNYVALE CALIF

INFO: AFPRO LOCKHEED ACFT CORP MSL & SPACE CO SUNNYVALE CALIF

UNCLASSIFIED SSH 27 8 33

ACTION LMSC FOR MR [illegible]. INFO AFPRO LMSC FOR MR HAGERTY.

SUBJECT: COST-PROPOSAL FOR LETTER CONTRACT AF 04(695)-194.

/I/ REFERENCE SSHK REQUEST FOR COST PROPOSAL TO DEFINITIZE LETTER CONTRACT AF 04(695)-194. /II/ INASMUCH AS THE PRODUCTION CONTRACT AF (695)-68 WILL BE CONVERTED FROM A FIXED PRICE REDETERMINATION CONTRACT, AT THE TIME OF THE REDETERMINATION TO A FIRM FIXED PRICE CONTRACT, SSHK REQUEST FOR A FIXED PRICE INCENTIVE CONTRACT PROPOSAL IS HEREBY MODIFIED TO A REQUEST FOR A FIRM FIXED PRICE COST PROPORAL TO DEFINITIZE L/C AF-194. /III/ THIS ACTION IS BASED ON THE FACT THAT THE AF-194 CONTRACT IS A FOLLOW-ON PRODUCTION ORDER, AND THE PHILOSOPHY FOR FIRM FIXED PRICE CONTRACTS HAS BEEN ESTABLISHED WITH THE AF-68 CONTRACT. FURTHER, THE FIRM FIXED PRICE CONTRACT IS CON-

-7 1530
AUG 1962

SSHK

MR. H. F. BECKER/mb/27 Aug 62
4115 RED 1 2

SIGNED

H. F. BECKER
CONTRACTING OFFICER

UNCLASSIFIED

SIDERED TO BE THE BEST EXAMPLE OF INCENTIVE CONTRACTS. /IV/ [illegible]
UNDERSTANDING AND ACCEPTION IS REQUESTED.

SIGNED: I. P. [illegible], CONTRACTING OFFICER

[redacted]

[redacted]

General:

There will be one contract with LMSC for the procurement of Agena vehicles (with ancillary services) for use by SSEI, SSZN and SSZX. This contract will be separated into three parts and actual program costs segregated for funding by each using program office. At a later date the AGE portion of this contract with program cost segregation may be withdrawn to form a separate contract. This will be done if deemed appropriate and only with mutual consent of the four Air Force Directors.

The using program office, in conjunction with their LMSC counterpart organization, will study their overall mission problems and determine their mission requirements. They will reflect these requirements in a Program/Agena D negotiated work statement for their program, a negotiated exhibit to the contract, detail Program/Agena D specifications, program peculiar equipment specifications, necessary test specifications to include a final systems test specification.

The above specifications will be provided in a timely manner to SSH, who with their counterpart LMSC organization will provide Program/Agena D vehicles to satisfy these acquired specifications.

Specific:

1. SSH shall cause LMSC to provide a "Pad ready" Program/Agena vehicle on the dock of Building 152 LMSC at an agreed upon date with the necessary AGE in place.

2. SSH will provide Air Force contractual and liaison engineering support.

3. SSH shall cause LMSC to remove and/or install all basic, optional and mission peculiar equipment to configure the Agena D to the specifications describing the Program/Agena D vehicle.

4. SSH shall cause LMSC to modify test complexes C-3 and C-5 to support the three using programs.

5. SSH shall cause LMSC to fabricate or procure mission peculiar equipment to conform to the specifications received.

6. SSH shall cause LMSC to test only to the specifications originally received or those mutually agreed upon at a later date. (i.e., This will be an A.F. Q.C. type acceptance inspection based on applicable specifications.)

7. SSH will provide configuration management control until the vehicle is offered for delivery to the using program office.

8. SSH and the using program offices will work as a team. Conflict of objectives between the three using program officed will be arbitrated among themselves; failing in this, resolution will be sought from SSZ - SSCO and a single course of action provided to SSH.

9. SSH shall cause LMSC to provide support (i.e., design criteria and specifications) for all launch complexes to be constructed or modified to the Agena D configuration.

10. SSH shall cause LMSC to provide all of the standard ground environment (AGE and personnel) to support the Agena D portion of an Atlas/Agena launch at AMR and PMR.

11. SSH shall provide budget planning information/assistance as required by the Program Offices.

Conditions:

The above Agreement is based on the adequate and timely funding actions by USAF and the program offices, the delivery of specifications on time, and the maintenance of an adequate qualified personnel strength in the Program Offices and SSH.

WILLIAM D. BRADY (SSZL)
Colonel, USAF

HENRY [illegible]. FLETCHER, JR. (SSH)
Colonel, USAF

GUENTER A. RIEPE (SSZY)
Colonel, USAF

LONNIE Q. WESTMORELAND (SSZN)
Colonel, USAF

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SEP 7 - 1962

[redacted]

[redacted]

ILLEGIBLE

[redacted]

1. The contemplated procurement is for all necessary services and material required to provide and maintain a capability for launching twelve (12) flight test vehicles at the rate of one (1) every two (2) months for the period 1 October 1962 through 31 March 1963; and one (1) each month for the period 1 April 1963 through 31 December 1963.

2. During evaluation and negotiation of the Contractor's technical and cost proposals every consideration will be given to the possibility of negotiating other than a CPFF contract, i.e., an instrument with incentive features. However, the nature of the requirement and imponderables connected with it would tend to preclude the development of incentive features which could be relied upon to truly reflect meritorious effort justifying incentive rewards or conversely reflecting bases upon which the contractor's fee would justifiably be reduced. In the event that a type of contract, other than CPFF, results from the above evaluations and negotiations, a new D&F will be processed.

3. It is proposed to issue Letter Contract AF 04(695)-198 for the above described requirements. The procurement is planned to be negotiated with Lockheed Aircraft Corporation, Missile and Space Company, Sunnyvale, California, for primary performance at the Atlantic Missile Range.

4. A Determination and Findings, copy attached, is submitted for signature, pursuant to AFPI 3-303(c).

SIGNED

WILFRED CRNKA
Contracting Officer

1 Atch
D&F

DEPARTMENT OF THE AIR FORCE
DETERMINATION AND FINDINGS
AUTHORITY TO [illegible] CONTRACTS

The Department of the Air Force proposes to use a CPFF contract for the procurement of services and material necessary to provide and maintain the capability for launching a maximum of one (1) flight test vehicle each two (2) months for the period 1 October 1962 through 31 March 1963; and one (1) flight test vehicle each month for the period 1 April 1963 through 31 December 1963. The estimated cost for this and additional effort associated [redacted]

I hereby find that the exact nature and extent of the work covered by the proposed contract and the precise method of accomplishing that work cannot be established in advance, but must be subject to improvisation and change as the work progresses, and the cost of performing said work cannot at this time be forecast with a reasonable degree of accuracy.

Upon the basis of findings set forth above, I hereby determine pursuant to 10 U.S.C. 2306(c) that it is impractical to secure services of the kind or quality required without the use of a CPFF contract and I hereby authorize the use of said contract.

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[illegible]/3511

Agena D FY-63 Funding Requirements to Support SSZ Program Requirements

SSZ

1. The FY-63 Agena D costs for SSZ programs are as follows:

Program		
[redacted]	2 vehicles @ 1.3/veh	- [redacted]
[redacted]	2 vehicles @ 1.3/veh	- [redacted]
[redacted]	2 vehicles long lead @ .6/veh	- [redacted]
[redacted]	6 vehicles @ 1.3/veh	- [redacted]
[redacted]	4 vehicles long lead @ .6/veh	- [redacted]
[redacted]	13 vehicles @ 1.3/veh	- [redacted]
[redacted]	3 vehicles @ 1.3/veh	- [redacted]
[redacted]	2 vehicles long lead @ .6/veh	- [redacted]
[redacted]	3 vehicles long lead @ .6/veh	- [redacted]
	Total	[redacted]

[redacted]

2. This 40.4M provides for the total Agena D costs for 26 vehicles including spares and optionals, plus a pro-rated share of logistic support, storage, repair, and general engineering support associated with the Agena D production program. It also provides the long lead funds required for 11 additional vehicles.

3. These costs are based on Date Table 19C dated 26 July 1962. Based on established SSG policy, program funds allocated to support the above effort will not be reprogrammed due to changing program requirements without SSG approval. Request the above funds be initiated as soon as possible.

SIGNED

HENRY N. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

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SSH-1055

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SSH/Maj Hegerls/911

SEP 11 1952

Agena D FY-63 Funding Requirements to Support NASA Program Requirements

SSVR

1. The FY-63 Agena D costs for NASA programs are as follows:

4 vehicles @ 1.3/veh -
(1 Gemini DTV, 1 Gemini, 1 Rebound, 1 POGO)
5 vehicles long lead @ .6/veh -
(2 Gemini, 1 Mariner, 1 Rebound, 1 OAO)

Total

[redacted]

2. The $5.2M provides for the total Agena D costs for four vehicles including spares and optionals, plus a pro-rated share of logistic support, storage, repair, and general engineering support associated with the Agena D production program. The 3.0M provides for long lead funds required for five additional vehicles.

3. These costs are based on Data Table 19C dated 26 July 1962. Based on established SSG policy, program funds allocated to support the above effort will not be reprogrammed due to changing program requirements without SSG approval. Request the above funds be initiated as soon as possible.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

SSH-1052

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SSH RECORD FILE COPY

ROUTINE X AF

SSD LOS ANGELES CALIF

CSAF WASH DC

UNCLASSIFIED SSH-13-9-10

FOR AFSPM. SUBJECT: STANDARDIZED BOOSTERS AGENA D. /1/ REFERENCE TWX USAF, AFSPM 79273 30 AUGUST 1962. LOCKHEED MISSILE AND SPACE COMPANY HAS WITHDRAWN THEIR ORIGINAL REQUEST FOR NEGOTIATION OF A REDETERMINABLE TYPE CONTRACT, AND HAS REQUESTED THIS HEADQUARTERS TO CONSIDER THE POSSIBILITY OF NEGOTIATING A FIXED PRICE INCENTIVE TYPE CONTRACT. /2/ THIS HEADQUARTERS HAS EVALUATED THIS REQUEST AND IS IN AGREEMENT THAT IT WOULD BE MORE ADVANTAGEOUS AND DESIRABLE TO NEGOTIATE AN INCENTIVE TYPE CONTRACT FOR THE STANDARD AGENA D BOOSTERS. /3/ THEREFORE, THE NEGOTIATIONS ARE BEING CONTINUED WITH THE GOAL OF DEFINITIZING THIS PROCUREMENT INTO AN INCENTIVE TYPE CONTRACT, ADHERING TO THE POLICIES AND CRITERIA ESTABLISHED FOR THIS TYPE OF CONTRACT. /4/ HQS AFSC, SCSK-3 HAS BEEN ADVISED OF THIS ACTION AND THE REQUEST FOR AUTHORITY TO USE A REDETERMINATION TYPE CONTRACT HAS BEEN WITHDRAWN BY THIS HEADQUARTERS.

SEP 13 1962

Original signed by,
CHARLES E. MOORE
Colonel, USAF
Chief, Procurement &
Production Office

SSEKK/es

MR. GRIFKA
11 Sep 62

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UNCLASSIFIED 280

SSH READING FILE COPY

ROUTINE
ROUTINE   X   AF
HQ SSD LOS ANGELES CALIF

AFSC ANDREWS AFB MD

UNCLASSIFIED SSH -13-9-11

AFSC FOR SCMK-3 SUBJECT: AUTHORITY FOR USE OF FORM C REDETERMINATION TYPE CONTRACT. /1/ REFERENCE TWX, SCMK-3 31-8-131 GRANTING AUTHORITY TO USE FORM C FIXED PRICE REDETERMINATION TYPE CONTRACT. /2/ LOCKHEED MISSILE AND SPACE COMPANY HAS REQUESTED THE AIR FORCE TO CONSIDER NEGOTIATING THIS LETTER CONTRACT INTO A DEFINITIVE FIXED PRICE INCENTIVE TYPE CONTRACT, IN LIEU OF A REDETERMINABLE TYPE. /3/ THIS REQUEST HAS BEEN REVIEWED AND DISCUSSED BY THE AGENA D PROGRAM DIRECTOR, TECHNICAL STAFF AND THE NEGOTIATION TEAM WITH LOCKHEED MANAGEMENT. SINCE THIS NEGOTIATION HAS CONTINUED OVER A LONGER PERIOD OF TIME THAN ORIGINALLY CONTEMPLATED, VERY LITTLE TIME WOULD REMAIN TO CONCLUDE THIS NEGOTIATION, PRIOR TO THE DATE THAT THE CONTRACT WOULD HAVE TO BE REDETERMINED, IN ORDER TO MEET THE LIMITATIONS ESTABLISHED BY ASPR. /4/ LOCKHEED'S REQUEST FOR A FIXED PRICE INCENTIVE

SEP 1[illegible] 1962

Original signed by

SSHKK/es
MR. GRIFKA
11 Sep 62

CHARLES E. MOORE
Colonel, USAF
Chief, Procurement &
Production Office

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CONTRACT HAS BEEN REVIEWED AND DISCUSSED WITH THE PROCUREMENT AND PRODUCTION STAFF OF THIS HEADQUARTERS. /3/ IT HAS BEEN CONCURRED IN BY THE DIRECTOR OF PROCUREMENT AND PRODUCTION, THE DIRECTOR OF THE AGENA D PROGRAM, AND THE AIR FORCE NEGOTIATION TEAM, THAT A FIXED PRICE INCENTIVE CONTRACT WOULD BE MORE ADVANTAGEOUS TO THE GOVERNMENT. THEREFORE, THE NEGOTIATION IS BEING CONTINUED WITH THE GOAL OF DEFINITIZING THIS PROCUREMENT AS A FIXED PRICE INCENTIVE TYPE CONTRACT.

9/8

[illegible] -2/15 [illegible]/[illegible]

SEP 17 1962

Memo for the Record

Capt George W. Watts

1. A design specification for the [illegible] operated hydraulic actuator for the Agena D is expected to be available for examination and review on 15 September 1962 and for publication and distribution to the various potential vendors on 26 September 1962. It is the intention of the LMSC Agena D group to take several months to evaluate the bids to be submitted for this unit, and thus it is unlikely that any contracts will be let before early 1963. This approach is in accord with the policy supported by Col Blum of diverting a major portion of the currently available Agena D funds to the IRP and permitting less critical items such as the actuator to be developed in a more leisurely fashion.

2. There is some question at this time regarding the desirability of incorporating an on-pad gimballing capability into the system, although SSD has hitherto been insistent on this point. To gain on-pad gimballing capability, the engine position centering ring in the booster adapter must be removed. If this is done, then it is conceivable that the unrestricted engine may oscillate to and fro during ascent under the influence of the booster dynamic environment. The capability of the structure to endure this type of motion, its effect on vehicle stability and the torques which might be imposed on the vehicle if the engine is in an off-center position when the ullage rockets ignite must be considered before the centering ring in the booster can be sacrificed.

3. There are, to be sure, other methods of restraining the motion of the engine than the use of a centering ring. It may develop that the piston friction of the actuators will be quite adequate to prevent engine motion. In addition, it is the intention of the Agena D group at LMSC to incorporate, at least initially, a locking device in the actuators themselves. This will consist of a spring loaded, piston operated detent mechanism which will release the engine when the pump pressure has built up to a level adequate to permit the detent piston to overcome the spring which holds the mechanism in the locked position. The entire locking device will be removable so that if future testing should prove it unnecessary, it can be eliminated from the system without otherwise altering the actuator.

SIGNED

[illegible] J. [illegible], JR.
1st Lt, USAF
Project Officer, SSEA-2

222

SSM

Production of Optional Kits under the -68 Contract SEP 24 [illegible]

Lockheed Acft Corp
Missiles and Space Co
Attn: Mr. J. L. Shoenhair
P. O. Box 504
Sunnyvale, California

1. The scheduling and production of optional kits to satisfy using program requirements has varied considerably in the past and it appears this condition will continue through the contract period. These fluctuations are due to changing program optional requirements and changing Agena D vehicle allocation as reflected in LMSC date table schedules. Part of the confusion in this area has been due to the learning process, but it appears that at this time we can delineate procedures to efficiently provide required optionals.

2. The optional kits including quantity are contractually covered in the -68 contract by Exhibit B. An optional equipment requirement list for each using program is attached and will be maintained by the Air Force Agena D office. This requirement list for individual using programs will not be changed without prior approval by this office. LMSC will provide the optional kits to satisfy using program requirements based on current date table schedules within the limits established in Exhibit B of the -68 contract. The using program requirement date for optionals is the date established in the date table schedule as program peculiar due dates. To effect minimum reaction time to program fluctuations a close liaison should be established between your scheduling people and Mr. Hazeltine's group at LMSC since his office if officially notified of program changes for impact and collation into date table revisions.

3. Establishing these ground rules should provide the LMSC Agena D organization the required contractual coverage and supporting information to effectively provide optional kits taking into consideration obsolescence, storage, repair, and program fluctuations.

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

1 Atch
Using Program Rqmt List

223

SSG

SEP 27 1962

FY-62 and FY-63 Agena D Funding Requirement

Secretary of the Air Force (SAFFM)
Wash 25 DC

1. The following information regarding Agena D funding is submitted as requested by telecon on 30 Aug 62 by Mr. Lewis Moyer.

2. To clarify the Agena D funding status this brief paragraph summarizing the evolution of the Agena D funding from accelerated go-ahead on 7 November 1961 follows. At the inception of the program no Air Force RDT&E funds were available so a reimbursable fund concept was established and the B.A. and P.A. were issued to cover FY-62 requirements for both the basic 12 vehicle prototype contract and long lead for a 39 vehicle production buy at four vehicles per month. The funding guidance at this time was that the R&D costs associated with the basic contract would be amortized among using programs at $800,000 per vehicle until all R&D costs would be covered. No R&D costs would be allowed on the production contract, but an advanced development program would be submitted and justified separately by the Agena D office and funded as an Agena D line item. All program users would program funds to transfer to the reimbursable account in the fiscal year of DD-250 delivery using $2.1M vehicle during FY-62 and FY-63 and 1.3M for FY-64 and subsequent years. These per vehicle costs were submitted and justified by the using programs during the FY-63 budget cycle.

3. On 29 May 62 Hq AFSC message (SCCEB-29-5-141) revoked the above-mentioned funding guidance and established the following ground rules for Agena D procurement.

a. The Agena D program would be funded by using program funds on an incremental basis with funds to be available at inception of procurement action. The procurement lead time for the Agena D is 12

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months to DD-250 delivery to the using program.

b. Reimbursable funds can be utilized to incrementally fund Agena D's on firm orders for NASA.

c. General support (Central Eng'g, SCTB, DTV, Reliability, Logistic Support, Storage) costs to support the Agena D program will be pro-rated to the using programs.

d. An Agena D line item would be established and funded in FY-63 to cover advanced development (component improvement) and to complete the basic R&D contract.

4. As a result of this new guidance, all FY-62 reimbursable funds on the Agena D contracts were replaced by hard money. The source of these funds to clear the reimbursable account for FY462 are shown in the following recap of FY-62 funding.

a. Basic R&D Contract AF 04(695)-21

648 Program Funds	[redacted]
162 Program Funds	[redacted]
Sub Total	[redacted]
Industrial Facilities	
162 Program Funds	[redacted]
Total	[redacted]

b. Follow-on Contract AF 04(695)-68

461 Program Funds	[redacted]
823 Program Funds	
698BJ Program Funds (FY-63)	[redacted]

5. FY-63 funding required to support the Agena D Program.

a. Agena D funds.

(1) Basic R&D Contract AF 04(695)-21. This contract [illegible] the first twelve Agena D's plus all development costs,

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DATE [illegible]					

[illegible] COORDINATION SHEET [illegible] Replaces AFBMD Form 11, 1 Jun 59 procurement package, and a capability to produce at a five vehicle per month rate.

FY-63 fund requirement
FY-63 funds received
[redacted]

The completion date for this contract is November 1962 with present funding adequate to carry the effort to completion.

(2) Advanced Development Contract AF 04(695)-191. This contract is to provide for improved reliability, producibility, mission adaptability and serviceability for the production Agena D.

FY-63 fund requirement
FY-63 funds received
[redacted]

This program has been approved by HQ USAF but as yet funds have not been released.

b. Using program funds.

(1) FY-63 funds required to complete the 39 vehicle buy plus optionals, logistics, spares, storage and general engineering support.

[redacted]

(2) FY-63 funds required to protect long lead requirements for the 22 vehicle follow-on effort.

[redacted]

(3) Total FY-63 funds required from using programs.

[redacted]

(4) The above FY-63 funding requirements are based on the contractor's cost proposal for a fixed price contract for the 39 production vehicles which is presently in negotiations plus contractor estimates for long lead and engineering support.

6. The recently established funding and contractual procedures for procurement of Agena D vehicles, based on projected requirements, incur yearly costs that do not change due to program fluctuations during the fiscal year and as such become relatively

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Need dates. For program financial planning, the following Agena D assignments to using programs are based on [illegible] Table [illegible] dated [illegible] Jul [illegible], with adjustments to reflect the slippage in Program [illegible]. This schedule is being used as a base to provide some stability in using program financial planning, but in reality these assignments will change as program requirements fluctuate. The Agena D vehicles are assigned using a revolving inventory which will assign the vehicles to programs to meet their need dates. The Agena D assignments, as shown in the following paragraph, should not be construed as firm; as program requirements change, the earliest Agena D will be assigned to the next program user.

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

a. [redacted]

b. [redacted]

c. [redacted]

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DATE					

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FY-62 funds utilized to replace reimbursable funds.

[redacted] [redacted]

1044

[redacted] [redacted]

[redacted] [redacted]

8. As indicated in paragraph 5.a.(2) of this letter, no funds have been received to date to cover the Advanced Development Contract. Due to the phase out of the basic R&D contract, it is imperative that funds be released immediately to provide contractual coverage for the Advanced Development Program to retain highly qualified LMSC engineering personnel that are vital to this program.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

Copy to:
Hq USAF (AFSSV-EQ)
Hq AFSC (SCGN)

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E	21 Sept 62				

MD Form 11 COORDINATION SHEET Replaces AFBMD Form 11, 1 Jun 59

[redacted]

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[illegible]

SEP 28 [illegible]

SUBJECT: First Article Configuration Inspection of S-011/13, 17-19 Sep 62

TO: Lockheed Missiles & Space Company
ATTN: Mr. J. L. Shoenhai[illegible]
Department 68-01
Sunnyvale, California

1. Attached for your information is a copy of the report on the First Article Configuration Inspection (FACI) conducted by AFSSD at LMSC on 17-19 Sep 62. It is emphasized that this report is based on a sampling only and in no way is it considered to be a complete listing of all discrepancies.

2. The results of the inspection indicated that the documentation presented to the FACI Team was not adequate to define a configuration baseline for Agena D vehicles (AD-13 and up) at this time.

3. Acceptance of Vehicles AD-13 thru AD-18 will be based [illegible] interim approval of the Detail Vehicle Specification, System Te[illegible]ification, and the six module specifications. These specif[illegible] are herewith given interim approval and will be considered frozen.

4. An abbreviated FACI will be given each optional kit when it is first presented to the Air Force for acceptance to insure that the documentation has been corrected when necessary and is in agreement with the hardware.

5. We are planning to conduct another FACI coincident with the delivery of AD-19. In the interim, configuration management and control procedures will be applied. LMSC should review the attached report and take action necessary to insure that deficiencies in documentation and procedures are corrected prior to the next FACI.

Henry M. Fletcher, Jr.

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

1 atch
FACI Rpt

Copy to AFPR, LMSC

ATTN #7

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SSD LOS ANGELES CALIF

AFSC ANDREWS AFB MD

INFO: CSAF

UNCLASSIFIED SSH 28-9-33

ACTION AFSC FOR SCGH, COL NUDENBERG; INFO CSAF FOR AFSSV-EC, COL KEEFFE. REFERENCE (1) SSH MONTHLY PROGRESS REPORT (SSH-1032) DATED 14 AUGUST 1962, (2) SSH MONTHLY PROGRESS REPORT (SSH-1075) DATED 13 SEPT 1962, (3) FY-64 TECHNICAL DEVELOPMENT PLAN FOR S-01A ADVANCED DEVELOPMENT (SSH-1087) DATED 24 SEPT 1962. THIS MESSAGE IN THREE PARTS. PART I. IN ALL THE REFERENCED DOCUMENTS YOUR HQS HAS BEEN ADVISED OF THE URGENT REQUIREMENT FOR RELEASE OF APPROVED FY-63 FUNDS TO SUPPORT THE AGENA D ADVANCED DEVELOPMENT PROGRAM. THE APPROVAL OF 5.4M IN FY-63 FUNDS FOR THE ADVANCED DEVELOPMENT PROGRAM WAS BASED UPON ELIMINATION OF ALL R&D COSTS FROM THE AGENA D PRODUCTION CONTRACT. GUIDANCE RECEIVED FROM YOUR HQS DIRECTED THAT ALL ENGINEERING EFFORT TO IMPROVE RELIABILITY,

SEP 28 1962

SEPT 62

SSHR

Maj Hagerle
3911

1 2

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agen

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SSD LOS ANGELES CALIF

MISSION ADAPTABILITY AND PROVIDE FOR SMALL PRODUCT IMPROVEMENT WOULD BE FUNDED UNDER THE ADVANCED DEVELOPMENT PROGRAM.

PART II. IN COMPLIANCE WITH THIS GUIDANCE THE AGENA D PRODUCTION CONTRACT HAS BEEN DEFINITIZED EXCLUDING THIS REQUIRED ENGINEERING EFFORT. DUE TO THE PHASE OUT OF THE R&D CONTRACT, IT IS IMPERATIVE THAT FY-63 FUNDS BE RELEASED IMMEDIATELY TO PROVIDE CONTRACTUAL COVERAGE FOR THE ADVANCED DEVELOPMENT PROGRAM TO RETAIN HIGHLY QUALIFIED LMSC ENGINEERING PERSONNEL THAT ARE VITAL TO THIS PROGRAM. THE PRODUCTION AGENA D CONTRACT CAN NOT BE SUPPORTED WITHOUT THE ADVANCED DEVELOPMENT CONTRACT. IF THESE FUNDS ARE NOT IMMEDIATELY AVAILABLE REQUEST YOUR GUIDANCE ON THE PRODUCTION CONTRACT BE REVISED TO INCLUDE THIS ENGINEERING EFFORT ON THE PRODUCTION CONTRACT. PART III. IN ADDITION TO THE ABOVE, THE ENGINEERING EFFORT REQUIRED TO SUPPORT ADDITIONAL REQUIREMENTS FOR THE NASA GEMINI TARGET CAN NOT PROCEED WITHOUT THE ADVANCED DEVELOPMENT FUNDS. THE LEAD TIME REQUIRED TO QUALIFY HARDWARE FOR THIS PROGRAM MAKES IT MANDATORY THAT FUNDS BE MADE IMMEDIATELY AVAILABLE.

HMF

226

In Reply Refer to:
LMSC/A063170
1 October 1962

Subject: Management of the S-01A Program

To:
AFSSD (DCLA)
Attn: Brigadier General H. V. Powell
Air Force Unit Post Office
Los Angeles 45, California

Enclosure: (a) Program Management Paper

1. In accordance with the request made during our discussions in General Estes' office on September 20, 1962, we have prepared a so-called "White Paper" covering the management, engineering, and control procedures used in the successful accomplishment of the S-01A Program. These comments are submitted for whatever help or applicability they might have toward other programs. We have only described those functions which were significantly different from those used on other programs that we have had at LMSC. It should be emphasized that the contributions to the success of the program depended on the interrelations of both the Air Force and LMSC efforts.

2. I would like to emphasize what I believe are three of the more important factors which contributed to the success of the program.

a. Clear-cut and short communication channels to a high level of final authority.

b. Encouragement from this level of authority resulting in a high degree of enthusiasm, cooperation, and integration of the LMSC and Air Force Program teams.

c. The support of the Projectized Program by a major industrial organization.

3. We recognize that most of the procedures used in the S-01A Program appear to be of the "For Motherhood - Against Sin" type, but as we all recognize, and as simple as it may seem, there is no substitute for good management effectively used. Dr. Charyk said this so very well in his Colorado Springs address on August 15 -- "Our ability to apply these simple maxims ... 'simple answers', 'clever solutions', 'original ideas', and 'realism' ... into practice will be a major factor in determining our place in the military technology role."

LOCKHEED MISSILES & SPACE COMPANY

L. Eugene Root
President

LER/JLS:sc

MANAGEMENT

Of considerable importance to the successful accomplishment of the S-01A Program was the high degree of enthusiasm with which the program was initiated from very high levels in the Air Force and DOD organizations. Extraordinary, short and clear channels of communications in the Air Force were established by direction from the top central authority to whom both the LMSC and the Air Force Program Directors could obtain ultimate decisions in both contractual and policy matters regarding both the technical and financial aspects of the program. Extremely competent and highly inspired program directors were appointed for both the Air Force and Lockheed. Both directors were given the confidence of and the support of all higher management levels. Authority was given these directors to commit to verbal, "on-the-spot" agreements, which were later translated into technical and contractual requirements. A high degree of mutual trust and cooperation between these directors contributed much to the success of the program. This mutual trust was engendered partially because of the "skunk works" approach. This attitude gave the Air Force representatives a certain degree of freedom with regard to justification for expenditure of government funds that is not normally evident in other programs. Free interchange of information and discussion of each other's problems existed through integration of both the Air Force and the Lockheed management teams, abetted by the physical location of Air Force personnel within the Lockheed engineering area.

Careful consideration was given for inclusion within the LMSC Program Director's organization those functions which contributed directly to the successful achievement of the objectives without unnecessary duplication of existing LMSC organizations and capabilities. However, even though projectization was utilized, the objectives of the program could not have been obtained without the total support of the major industrial organization of LMSC with all its accompanying centralized facilities.

The highest practical level of priority consistent with the importance of the program, in this case a DX-1A, was assigned and rigidly enforced. Availability of this high priority gave proper emphasis toward the provision of sufficient materials and manpower to achieve timely completion of objectives. The Air Force personnel with the responsibility for technical and financial controls worked in extremely close liaison with their LMSC counterparts so that formal meetings were not required. By being assigned to the same enclosed work area the individuals had almost daily contact with each other in a continual review of problems and their solutions as well as being isolated from continual outside contact by interested, but non-contributing parties. The Air Force did an outstanding job in protecting the program from technical directive meetings and visitors involving groups of persons or education of individuals of limited contributory effort, thus preventing interference with the productive efforts of individuals assigned to the program. LMSC likewise prevented interference by relieving the Program Director of many of the less significant statusing meetings and normal reporting functions.

Both the Air Force and LMSC Program Directors, their management staffs, and engineering organizations were located within a closed area adjacent to the manufacturing final assembly facility. Access to the closed area was controlled by means of locked doors opened only by key cards whose distribution was limited. Daily contact between all elements of the organization was encouraged and informality of communication was a key note. The enclosure of the program personnel was provided to discourage casual visitors and was highly successful in the accomplishment of this objective.

While funding was adequate to prevent excessive budget fluctuations, it was not provided in accordance with the original plan; however, flexibility of budget was allowed in both the intertransfer of funds and overtime expenditures to prevent costly delays pending approval of higher authority.

An early determination of objectives, requirements, and description of work was agreed upon and performance requirements were delineated prior to the major design effort. Program schedules and milestones were established early in a tight but timely schedule for both engineering and manufacturing accomplishments. This effort was a group activity including many, if not most, of the selected management team, both LMSC and Air Force, and at least the senior managers and representatives.

The Air Force team and LMSC managers and senior managers assisted in the preparation of basic program ROM's and negotiations for funds to accomplish their assigned tasks. LMSC managers were given clear assignments of the budgets negotiated in both amounts and man-rated time spans upon the completion of contract negotiations. They understood their direct responsibility for their adherence to these limitations to the same degree of emphasis as was placed upon them for the successful

[redacted]
were carefully selected at the beginning of the contractual effort to be compatible with the items of technical responsibility in order to provide consistency.

Air Force approval of vendor selections and actions was obtained "on-the-spot" with key personnel intimately involved in the decisions necessitating such selections. The technical Air Force personnel were free to sit in bidders' conferences, technical negotiations and design review meetings, and they did so whenever possible.

The Air Force waived requirements for detailed, formalized engineering reports and based their analysis and approvals on the same basic engineering reports utilized by the LMSC design organization. Copies of these reports were available, if not distributed, to Air Force representatives merely for the asking and no limitation was placed on the number of copies or the circulation of IDC's, memo notes, stress notes, or design notes.

The Air Force waived requirements for formalized MIL Specification compliance of drawings and equipment specifications until after the finalization of the design. Red-lined drawings were used extensively with Air Force approval of the completed vehicle based on the successful accomplishment of a systems test.

[illegible]

Of primary importance in the timely completion of the S-01A Program is the fact that the program objectives were based on essentially a redesign of an existing space vehicle whose characteristics were relatively fixed, rather than a completely new design with all its associated development efforts. Many of the equipments utilized in the S-01A Program were used directly from the S-01 Program with little or no design change. The redesign of S-01 equipments that were required, however, was accomplished through a systems approach rather than a subsystems approach by a high degree of coordination between engineering groups.

The design philosophy or concept which detailed the limits and set the objectives for the design to provide a yardstick against which proposed variations were measured was conceived, approved, and widely distributed for the information of all concerned in the form of an advanced vehicle description.

The test philosophy which dictated the criteria to which the design was to be qualified, evaluated and accepted was likewise widely disseminated. In spite of the urgency of the program, full qualification of all components was required and a minimum of deviations were allowed designers against criteria established in the test philosophy.

The acceptance philosophy under which the equipments were purchased, tested and vehicles delivered was clearly defined and tailored to the objectives of the program through the issuance of clear, well-defined test plans.

The size of the engineering organization was carefully restricted to minimum essential numbers of people in order to keep the lines of communication short and to facilitate the use of verbal communications. Additional manpower, when required, was drawn from the central engineering organization for temporary use.

A team spirit was engendered by working together toward a recognizably difficult schedule and the creation of a protective atmosphere by establishment of a closed area restricting unnecessary visitors or interruptions. Engineering personnel were directed to maintain rapid and adequate communication between themselves and the manufacturing organizations which were physically located in close proximity to bring about a free interchange of ideas, information and rapid resolution of problems.

Since engineering design contains a considerable amount of technical judgment, it was decided to organize the design function into two separate groups to provide a check and balance of the design between systems and subsystems. A systems engineering group was responsible for the conceptual design of the overall vehicle systems and interfaces. This group maintained the "Advanced Vehicle Description", issued test plans and controlled the qualification, acceptance, and evaluation testing requirements. A second major group of engineers did the detailed design released for manufacturing, coordinated subcontractual efforts and prepared individual equipment specifications subject to the approval of the first group's reliability analysis.

Extensive use of engineering mockups and test vehicles was made for functional compatibility and qualification testing of prototype and pre-production hardware. In toto, there were three engineering mockups in continuous use and five test vehicles, including a Development Test Vehicle, a Functional Mockup, a dynamic test vehicle and two structural test vehicles.

The initial engineering drawing system was highly simplified requiring only those drawings essential to tool, build, and service the vehicle. An internal, rapid release drawing system was established within the engineering organization to provide rapid handling of released drawings and quick response to revisions and changes to the shop. A system of drawing control was established which created a limited number of "controlled drawings". During the early phases of the program it was possible for an engineer to make a change by red-lining the "controlled drawings" without time consuming procedures of formal drawing change releases. Manufacturing organizations were cautioned against the use of other than "controlled drawings" in the fabrication or assembly of hardware. Design freeze was not achieved as early as originally planned due to certain clarification of using program objectives which resulted in structural changes and certain functional equipment inadequacies discovered during final assembly checkout and flight of the first few vehicles. As planned, the MIL Specification drawings were produced as soon as the design had been frozen and were done on the basis of a re-draw program from the earlier "skunk works" drawings. Initial tooling was of the simplest type to achieve program objectives. Although full interchangeability was not obtained early in the program, the design incorporated the provision for such interchangeability based on the availability of hard tools. No detailed tool drawings or Air Force approval was required until design maturity had been achieved with the release of prototype drawings.

[redacted]

Program control was achieved through the utilization of a staff function of the [illegible] director. This organization maintained cognizance of engineering released and manufacturing schedules as well as budgetary and financial status of the operating organizations. Important administrative, budgetary, design, and hardware schedules were statused and published weekly in a bulletin to provide managers a measure of their performance. Reprogramming of objectives was only permitted through the preparation of brief program plans by this organization which clearly showed recovery schedules against the original schedule and responsible actions by all contributing organizations.

Pipeline meetings were held weekly, attended by all managers of the key managerial team, as well as responsible representatives of the major supporting organizations of LMSC. Members of the Air Force program office were in attendance and no attempt was made to minimise the problems or the evidences of poor performance on the part of any individual. The Air Force program officers worked with and contributed to the resolution of program problems in detailed, direct and daily contacts with LMSC managers. The format of these meetings consist of a brief review of the progress made, a review of status (both contractual and hardware) and specific statements of problems and actions required. The reporting methods were brief, but concise, in both budget and technical problems. Solutions and resolutions of problems were clearly established whenever possible in this meeting with extremely few exceptions consisting of those problems which had to be referred to the higher control authority.

In all cases, decisions were rapid and forthcoming to satisfy all open issues and direct assignments were made on problems resulting in an early resolution.

Rigid control was maintained by all managers, both Air Force and LMSC, in the timely closure of their assigned tasks. Engineering decisions were not allowed to be deferred and designs were frozen as soon as they satisfied the program objectives. Continual minor improvements, however desirable, were not generally allowed.

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~~CONFIDENTIAL~~

Ltr, SSVSP, Maj Mac, [illegible] Sep 62, Subj: Liquid Rocket Engine Data

Request to fill out engine data sheets for improved version of the engine for solicitation of other information and transmittal to Mr. Schmare of the 6593rd Test Group.

1st Ind (SSVAA-2/Capt Watts/3013)

OCT 5 1962

SSD, AFUPO, Los Angeles 45, Calif

TO: SSVSP (Maj Mac)

Attached is the information requested in the basic letter.

ROBERT K. LE BECK
Lt Colonel, USAF

for EDWARD F. [illegible], Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

1 Atch
N/C

If inclosures are withdrawn (or not attached) the classification of this correspondence will be Uncl.

~~CONFIDENTIAL~~

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~CONFIDENTIAL~~

For DCT, BSL, 6593 Test Gp (DEV)

ENGINE DATA SHEET

1. Nomenclature: XLR81-BA-9 (Bell Aerosystems Company Model 8096)

2. Propellants: Inhibited Red Fuming Nitric Acid and Unsymmetrical Dimethylhydrazine

3. Thrust: Vacuum: 16,000 lbs (rated)

4. Isp: Vacuum: 290 sec (minimum guaranteed)

5. Expansion Ratio: 45 to 1

6. Chamber Pressure: 500 psi

7. Envelope Size: length 83.0 inches measured from the mounting plane to the thrust chamber nozzle extension exit.

8. Turbine-Pump Engine Wt.: Dry Weight: 295.0 lbs including thrust chamber assembly, nozzle extension, turbine pump assembly, engine mount, engine installation.
Wet Weight: 307.0 lbs

9. Engine Thrust Chamber Assembly Weight: Thrust chamber assembly (less nozzle extension) weight (dry) - 98.0 lbs. Nozzle extension weight - 50.0 lbs.

10. Type Feed System: Turbine Pump Feed System.

11. Type of Ignition: Hypergolic propellant reaction

12. Restart Capability: No. of times provided for: Two (Initial start and one restart)

13. Other Engine Data:

(1) Number of Controls: [illegible]

Mechanical: No external mechanical controls.

Electrical: This is a fixed thrust engine with starting and restarting accomplished by supplying electrical power to the engine power relay and the turbine starter igniter.

(2) Type and Amount of External Power Requirement:

(a) All components using electrical power operate on d-c power in the range of 19.5 to 30.5 volts with a maximum ripple content of 500 mv.

(b) The engine has a gimbal capability, however, the type of gimbal system is determined by the vehicle manufacturer.

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(c) Helium gas is supplied to pressurize the oxidizer pump shaft lip seal at a pressure of 5.0 ± 3 psig.

(d) Ten cubic inches of nitrogen gas at a working pressure of 1500 psi are supplied to accomplish a fast shut down after the initial period of engine operation of a dual burn flight.

14. Reliability Data:

a. There have been 46 flights using this engine. Of these flights 14 had two engine operations giving a total of 60 engine starts. The second engine operation of one flight was unsuccessful and is the only time this engine, when given an opportunity, has failed to operate.

b. The engine reliability program established a reliability of .801.

15. Special Features and Remarks:

a. Number of umbilicals required in a launch vehicle:

(1) Two for propellant filling

(2) Two for propellant tank venting

(3) One for high pressure nitrogen source.

(4) One for high pressure helium

(5) One for electrical source. This one would in all probability be combined with the main vehicle electrical umbical

(6) One for air conditioning to maintain propellant temperatures in the tanks

(7) An overboard scavenge line is required for the pump lip seal cavity drainage. Agena uses a plastic tube with a guillotine.

b. Two days of prelaunch checkout time are required for the propulsion system.

c. The engine has a shelf life of two years provided that after the first year it receives a complete flushing.

d. Remarks: The XLR81-BA-9 engine has been modified to the XLR81-BA-11 configuration by several minor modifications. The main one being a change in the turbine exhaust duct design. In May 62 the Bell Aerosystems Company was authorized to modify the XLR81-BA-11 to provide for multiple starting (XLR81-BA13) by removing the present solid propellant starting configuration and provide starting by direct ignition of the propellants in the gas generator.

16. Dates:

a. Initial design date: August 1959

b. Preliminary flight rating test date: (completed) October 1960

c. Flight date: The engine was flown the first time on 7 December 1960.

DOWNGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

[illegible] Lt Briones/[illegible], [illegible]   OCT - 8 1962

Ground Rules for Management of the AC-1 System

To: [illegible] Corp
[illegible] Co
Attn: [illegible]
[illegible]
[illegible], Calif

1. In order to establish an understanding of the Air Force/Aerospace Corporation role in the management of the AC-1 Automatic Checkout System, the following paragraphs will delineate the ground rules to be followed during the course of the AC-1 development. It is recognized that the AC-1 development represents a formidable task, which requires close working relations to achieve the optimum system to meet Air Force requirements. It is hoped that conformance to these ground rules will facilitate progress and insure satisfactory equipment performance.

2. Reliability - The following documentation is to be submitted:

a. Reliability Demonstration Plan prepared by LMSC and submitted to the Air Force/Aerospace Corporation for approval by 120 days after subcontract award.

b. Subcontractor Reliability Plans shall be submitted to the Air Force/Aerospace Corporation for information. Copies of related LMSC correspondence either approving or requesting changes to the subcontractor specifications should also be submitted.

3. Maintainability - The following documentation is to be submitted:

a. Maintainability Plan generated by LMSC for AC-1 is to be submitted for Air Force/Aerospace Corporation approval.

b. Subcontractor Maintainability Plans are to be submitted for Air Force/Aerospace Corporation information, along with related LMSC correspondence concerning these plans.

4. Radio Frequency Interference (RFI) - If there are contractual problems regarding the timely preparation and submittal of LMSC or subcontractor RFI documentation, this office should be informed. The following is the required RFI documentation to be submitted in accordance with LMSC 3204934:

Lt Briones/esm

5 Oct 62

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[redacted]

ILLEGIBLE

OCT - 8 1962

Lockheed Aircraft Corp
Missiles & Space Co
Attn: Mr. [illegible] Harrison
[illegible]
[illegible] Calif

1. In order to establish an understanding of the Air Force/Aerospace Corporation role in the management of the AC-1 Automatic Checkout System, the following paragraphs will delineate the ground rules to be followed during the course of the AC-1 development. It is recognized that the AC-1 development represents a formidable task, which requires close working relations to achieve the optimum system to meet Air Force requirements. It is hoped that conformance to these ground rules will facilitate progress and insure satisfactory equipment performance.

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Lt Briones/ecm

5 Oct 62

a. EMC Interference Control Plan, Test Plan and Test Report to be submitted for Air Force/Aerospace Corporation approval.

b. Subcontractor Interference Control Plans, Test Plans and Test Reports to be submitted for information, along with related Lockheed correspondence.

5. 9412D submittals: All data submittals required by MIL-D-9412D shall be submitted to the Air Force/Aerospace Corporation. Further guidance on 9412D submittals will be provided at a later date.

6. Equipment Development - A detailed schedule of significant equipment development milestones shall be submitted to the Air Force/Aerospace Corporation and updated as required. The Air Force/Aerospace Corporation should be immediately informed of any schedule slippages which could impact the system ready for use date. The Air Force/Aerospace Corporation team shall be informed of all design reviews, and shall attend where possible. Data such as subcontractor progress reports shall be submitted to the Air Force/Aerospace Corporation for information.

7. Programming - A detailed computer programming schedule shall be provided, indicating the LMSC programming effort and the subcontractor programming effort. Programming progress reports shall be submitted to the Air Force/Aerospace Corporation.

8. Specifications - Major changes to the AC-1 specifications (LMSC 1413009, 1413010, 1413011, 1413012, VN-030) shall be submitted to the Air Force/Aerospace Corporation for approval. In cases where schedule could be impacted, verbal approval will be provided followed later by the formal specification change. The Air Force/Aerospace Corporation will be informed of all specification changes.

9. To expedite timely review of technical data, copies of all technical documentation pertinent to the AC-1 system shall be submitted to Aerospace Corporation and the S-01A AGE Division (SSMG).

SIGNED

JOHN S. PLUMMER, JR.
Lt Colonel, USAF
Chief, S-01A AGE Division

Copy to
SSZME (Maj Marsh)
Aerospace Corp (Mr. Sternke)
AFPRO LMSC SV
AFPRO LMSC VN
LMSC SV (Mr. Everson)

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UNCLASSIFIED

[illegible]
[illegible] X AF

SSD LOS ANGELES CALIF

AFPRO LOCKHEED ACFT CORP MSL & SPACE CO SUNNYVALE CALIF

LOCKHEED ACFT CORP MSL & SPACE CO SUNNYVALE CALIF

UNCLASSIFIED SSH 12-10-23

ACTION FOR MR K HAGERTY - FOR LMSC MR WIEGERD - REFERENCE RFP NO. 04-695-63-136 AND WORK STATEMENT THERETO. PARAGRAPH 3.2.1 OF TAB 3 OF SUBJECT WORK STATEMENT IS HEREWITH AMENDED TO READ AS FOLLOWS: "THE CONTRACTOR SHALL PROVIDE ADEQUATE STORAGE CAPABILITIES FOR A MAXIMUM OF TEN (10) S-01A VEHICLES AND ASSOCIATED HARDWARE, FOR A PERIOD NOT TO EXCEED THREE (3) MONTHS FOR EACH VEHICLE, INCLUDING:" SIGNED, H. F. BECKER, CONTRACTING OFFICER

12 OCT 1962

SSHKK

MR. H. F. BECKER
4115 R&D 1 1 H. F. BECKER
CONTRACTING OFFICER

UNCLASSIFIED

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SSH

Agena Presentation 15 Oct 62

SSC

1. At the direction of Hq USAF, a presentation was made to Hq AFSC on 9 October and to Hq USAF on 10 October. Subjects covered were Agena D production contract and Agena Advanced Development funds requirement.

2. The presentation as shown to you on 5 October was approved by General Ritland and staff. General Thurman permitted the presentation as prepared to be made to Dr. Charyk and Mr. Imirie. During the presentation to Dr. Charyk, General Thurman expressed his reservations relative the lack of a provision in the contract for Contractor penalty. General Thurman asked for and was given by Mr. Imirie the authority for approval of the -68 contract. On 11 October, General Thurman through General Keeling issued instructions to General Powell to delay manual approval. A letter with guidance as to action to be taken has been written to SSD.

3. The funds for the Advanced Development of the Agena were not released by DDR&E. Dr. Charyk directed that we relate the component improvements to individual program requirements. I am endeavoring to do this although it is contrary to the Agena D management philosophy previously approved by Dr. Charyk. I plan to return to USAF within two weeks. You and General Evans will review the material to be presented.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

~~CONFIDENTIAL~~ 231

ROUTINE
ROUTINE X AF

SSD LOS ANGELES CALIF

AFSC ANDREWS AFB MD

DOWNGRADED AT 3 YEAR INTERVALS; DECLASSIFIED AFTER 12 YEARS. DOD DIR 5200.10

INFO: CSAF

~~CONFIDENTIAL~~ SSH 15-10-28

ACTION AFSC FOR SCGN, COL NUDENBERG; INFO CSAF FOR AFSSV-EQ, COL KEEFE. REFERENCE (1) AGENA D PRESENTATION AT HQ AFSC AND HQ USAF BY COL FLETCHER ON 9 - 10 OCTOBER 1962. (2) SSH MONTHLY PROGRESS REPORT FOR SEPTEMBER, DATED 12 OCTOBER 1962. IT IS REQUESTED THAT YOUR HQ PROVIDE REQUIRED AUTHORITY TO EXTEND THE AGENA D PRODUCTION THROUGH JUNE 1964. THE CONTRACTOR IS PRESENTLY CONTRACTUALLY COVERED BY LETTER CONTRACT AF 04(695)-194 TO PROTECT LONG LEAD REQUIREMENTS FOR AN ADDITIONAL 22 VEHICLES AT 4 VEHICLES PER MONTH WITH LAST DELIVERY SCHEDULED IN

1500
OCT 15 1962

OCT 1962

SSHR

Maj Hegerle
3911 1 2

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

~~CONFIDENTIAL~~

SSD LOS ANGELES CALIF

DECEMBER 1963. THE 12 MONTH LEAD TIME REQUIRED TO PROTECT ORDERLY NON-INTERRUPTED AGENA D PRODUCTION REQUIRES ADDITIONAL CONTRACTUAL AUTHORITY BY JANUARY 1963 FOR VEHICLE DELIVERY IN JANUARY 1964. TO AVOID ANOTHER LETTER CONTRACT IT IS REQUESTED THAT YOUR HQ EXTEND THE AGENA D PRODUCTION THROUGH JUNE 1964 NO LATER THAN 22 OCTOBER 1962. THIS WILL ALLOW SSH TO NEGOTIATE THE COMPLETE FY-63 AGENA D REQUIREMENT ON AF CONTRACT AF 04(695)-194 IN JANUARY 1963 IN COMPLIANCE WITH HQ GUIDANCE ON LETTER CONTRACTS. DELAY IN RECEIPT OF ADDITIONAL AUTHORITY WILL NOT PROVIDE THE PROCUREMENT LEAD TIME NECESSARY TO AVOID A LETTER CONTRACT. SCP.4.

[redacted]

OCT 1 6 1952

1st Ind (SSH)

SSD, AFUPO, Los Angeles 45, Calif

TO: SSVZR

1. Reference paragraph 1a of the basic letter. Present plans are that the XLR81-BA-13 (BAC Model 8247) engine will be identified as the alternate basic engine for the Agena D. vehicle. However, only the vehicles (basic AD 13's) delivered as Gemini Target Vehicles will have the XLR-BA-13 engine installed at delivery.

2. Reference para 1b of the basic letter. At this time SSH has been unable to commit contractually for any of the changes discussed in the NASA Programs Status Report Meeting held at AFSSD on 2 October 1962. It is suggested that NASA be requested to review the list of possible changes discussed to determine the necessity for any of these changes in order to meet their program requirements.

3. It is anticipated that a decision will be made concerning the improvements to be incorporated into Agena D by 1 November 1962.

SIGNED

[illegible] M. [illegible], JR.
Colonel, USAF
System Program Director for Agena

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OCT 18 1962

[redacted] Boosted Missions

a trip on 9 and 10 October 1962.

nts for change and retro-fit
e Thrust Augmented Thor (TAT)

b. Review need for protection of the S-01A from aerodynamic loads by use of a cylindrical barrel ahead of Station 247.

2. Lack of adequate data and analyses prevented the validation of the requirements. While the source of the original criteria was determined, changes since it was published have left two major contradictions which must be resolved before the changes can be considered valid requirements.

3. The cylindrical section which is presently in the mission peculiar equipment is simply another means of bypassing the lack of complete tests and analyses. At this time, it must be considered as a safety factor which the using program chooses to apply rather than a definite requirement.

4. Test effort and analysis necessary to resolve the contradictions is in process, and, while no official schedule exists, can be expected to be complete by 1 November 1962.

SIGNED

JOHN A. FIEBELKORN, Capt, USAF
Requirements & Programming Office

1 Atch
Appendix I

Copy to:
SSZD (Col Worthington)

SSER

Capt Fiebelkorn/jrn
15 Oct 62

[redacted]

1. The requirements for changes in S-01A design due to its use on a Thrust Augmented Thor (TAT), and, further, the requirement the S-01A then causes in a mission peculiar forward section were evaluated on a trip on 9 and 10 October 1962.

2. Considerable discussion on 9 October 1962 dealt with the recommended changes being proposed by the S-01A organization to fulfill the loads requirement identified by the research departments of LMSC. Four such "fixes" were recommended.

a. Change pin-pushers holding the horizon sensor fairings.

b. Redesign the tank fairings for higher crushing loads.

c. Strengthen the structural ring at the separation plane.

d. Stiffen the structural ring at the base of the Booster Adapter.

Changes a and b were stated to be necessary due to a higher differential pressure existing over the vehicle caused by higher dynamic pressure factor arising from TAT flight. Changes c and d were recommended due to higher bending loads while c had a contributing factor of poor material properties.

3. A discussion of the appropriate point for change, if required, indicated that LMSC, including the using program representative, preferred having the effort done by S-01A. Much of the rest of the day was expended in discussion of the basic principles used by the research departments in establishment of their criteria. A vital point was the reluctance of these groups to consider the mission peculiar equipment separately from the S-01A in terms of design criteria. This reluctance to consider S-01A as hardware in being and to define requirements based on it caused a review of basic data which was performed on 10 October.

4. The differential pressure criteria which caused a and b is derived from wind tunnel data of pressure distribution over a vehicle. This data, by definition, is based on free stream ambient pressure. Since wind tunnel data is being verified, the LMSC approach has been that all analysis is correlated to flight ambient. From this, an analysis of ambient to internal pressure is made (containing a 0.8 psi uncertainty) and the criteria established. Test data taken on two early flights which gave differential pressure across the skin was treated in a complex manner in order to verify wind tunnel data without attempting to verify design criteria directly. The result is that all criteria produced contain a factor of 0.8 psi for uncertainty. S-01A criteria, including this uncertainty, is 1.5 psi. All data that was available stated that the maximum crushing pressure should be about 0.5 psi for non-TAT and 0.7 psi for TAT flights. If one considers that flow into or out of the vehicle

is a function of pressure ratio, and only indirectly a function of ambient pressure, the need to increase the criteria for the tank fairings (change b) becomes hard to justify.

5. The burst pressure on the forward section, caused by external aerodynamics; is the criteria for the change to the pin-pushers. This criteria assumes a sealed forward section, or at least so little leakage that it does not influence either the differential pressure or the venting path. This assumption was based on the data from the S-01A test taken at fairly low differential pressures. The leakage in that test was increasing markedly as differential increased, but the increase was not considered to be supported by sufficient data to alter the criteria. A limit pressure differential test was run and seemed to indicate a very high leakage rate, contradicting the assumption on sealing, but this was discounted because differential pressure was not, or could not, be held long enough for stable conditions to occur.

6. Changes c and d are recommended by LMSC for AD-9 through AD-17 on a retro-fit basis in order to make the S-01A vehicle capable of withstanding the criteria which has previously been worked into AD-18 and up. Change c was also stated to be necessary due to reduced material properties of forged rings. The criteria was originally established by calculation of basic aerodynamic parameters due to the lack of test data within LMSC. Since the original criteria, Douglas has supplied wind tunnel test data on a similar configuration. Application of the test data reduces the load requirement substantially. In fact, if the Douglas data is correct, the original criteria for AD-9 makes the vehicle strong enough to withstand the 99% winter wind when boosted by TAT. The Station 492 ring changes from definitely requiring redesign to having a marginal margin of safety, retaining a full factor of safety. This is not intended to criticize the criteria for AD-18 and up, which now appears conservative. At the level of knowledge then in existence, no other path could have been taken. It does point up the effect of design change without adequate data. An auxiliary effect of the revised criteria is that trajectory analyses, based on the LMSC calculations of basic parameters, indicate that the vehicle would be unstable if they are correct. Application of the Douglas test data indicates a stable vehicle results. A possible conclusion or extrapolation is that if the vehicle is stable, no change is necessary. Another conclusion that can be reached is that the TAT boosted vehicles are an extremely sensitive configuration.

7. Two major contradictions exist:

a. The hardware test data does not support the assumptions used in the differential pressure criteria.

b. The aerodynamic data differs between LMSC and Douglas, with LMSC calculations indicating an unsatisfactory configuration might exist.

Until these contradictions are resolved, any change would have to be considered a safety factor and/or interim to a final fix.

8. A specific request was made by Colonel Worthington to validate the need for a cylindrical section ahead of the Agena D to protect it. This section is necessary only if either of two conditions exist. First, the obvious condition of needing additional volume for mission peculiar equipment would find this volume convenient; second, if the Agena forward section cannot accept, structurally, the high burst load involved in theoretical aerodynamics and further does not leak sufficiently to reduce the pressure differential, some protection or redesign is necessary. A definite answer must then wait for completion of analyses described in the following paragraph.

9. Efforts under way at the present include a parametric study of the effects of leakage in the forward section which should be complete during the week of 15 October 1962, and a differential pressure leak test of the forward section hardware. These efforts should resolve the need for changes a and b. LMSC and Douglas are attempting to resolve the differences in the aerodynamic parameters.

10. I recommend that action or approval of these changes in the basic S-01A production be withheld pending completion of analyses. There is considerable doubt in my mind that any retro-fit will be necessary at all. Further, I question whether protection by mission peculiar cylindrical structure will be needed. If the using program must make an early decision, they may wish to apply a safety factor by addition of the structure or change of the pin-pusher, wholly at their convenience.

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SSH

AFPR Logistics Surveillance of Program S-01A 19 Oct 62

AFPRO (Col Voyles)
Lockheed Msl & Space Co
PO Box 504
Sunnyvale, California

1. Reference is made to SSH letter dated 4 Jun 62, subject: AFPR Surveillance of -68 Contract Spares Procurement and AFPR reply RWRMM(P) dated 22 Jun 62.

2. In the intervening period the scope of S-01A activities has expanded significantly, and this office considers it appropriate to outline again the areas within the purview of the Air Force Plant Representative's Office where SSH will expect support.

3. Specific areas requiring AFPR logistics surveillance are:

a. -21 Contract. Analysis and recommendations regarding the revisions to the priced spare parts list. Surveillance of LMSC logistics management to assure that assets available from the -21 contract are properly applied to requirements of the -68 follow-on production contract.

b. -68 Contract. Continuous surveillance of LMSC actions to establish and maintain accurate requirements computations in support of the spares buy. Analysis and recommendations regarding the revisions to the priced spare parts list. Supervision of LMSC integration of logistics actions between this contract and the follow-on production contract.

c. Repair and Storage Contract. Surveillance over LMSC in-house maintenance and modification activities and sub-contracting efforts in support of this contract. Analysis of LMSC proposals leading to fabrication and/or purchase of bits and pieces to support the maintenance and modification effort. Supervision of LMSC storage of the S-01A vehicles.

d. Recycled Components. Surveillance of basic Agena D components removed by using programs to assure that LMSC returns these items to the spares inventory or to the sub-contractor to provide reuse to the best interests of the Air Force and that proper control of these items is maintained.

e. All S-01A Contracts. Surveillance of LMSC management actions in the warehousing, stock control, disposal and related materiel control functions supporting this program.

4. Your comments and/or concurrence of the above objectives would be appreciated.

FOR THE COMMANDER

SIGNED

HENRY M. FLETCHER, JR.	2 Atch
Colonel, USAF	1. SSH ltr 4 Jun 62
System Program Director for Agena	2. RWRMM(P) ltr 22 Jun 62

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[illegible]

Optional Equipment Requirements for S-01A Vehicles

OCT 22 1962

[illegible] ([illegible])

1. To permit production planning for S-01A vehicle optional equipments, it is necessary to establish firm optional kit requirements for each program utilizing the S-01A vehicle.

2. It is requested that separate optional kit requirements be established for the Ranger, Mariner, Gemini, POGO, Nimbus, Rebound, and OAO Program vehicles. To meet planning deadlines, a reply is requested by 31 October 1962. This office will be happy to assist you in the determination of your optional requirements.

SIGNED

[illegible] L. KENNEDY, Major, USAF
Chief, Requirements & Programming
System Program Director for Agena

SSER

Maj Barnes/jrn
22 Oct 1962

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SUBJ:

Sole Source Justification, Contract AF 04(695)-221 OCT 22 1962

[illegible]

1. This sole source justification is prepared as required by SSD Procurement and Production Procedure No. 12, dated 24 April 1962, and ASPR 3-102(c).

2. It is proposed to award the Lockheed Aircraft Corporation, Lockheed Missiles and Space Company, Sunnyvale, California a contract for the repair, maintenance and storage of Agena D vehicle spare parts and vehicles for the following reasons:

a. Lockheed Missiles and Space Company is presently fabricating, assembling and delivering Agena "D" vehicles and associated spare parts to the Air Force under a production contract.

b. As directed by higher authority, the rate of delivery of Agena D vehicles exceeds the use rate, and vehicles must be stored. This requirement is so that vehicles will be available for immediate use for priority, special, or emergency programs.

c. The vehicles must be stored in a controlled environmental condition in the same area or adjacent area to the manufacturing facilities.

d. LMSC at the direction of this headquarters allocated storage space in a new facility, expressly designed for the Agena D production for this purpose. This area is completely suitable to the peculiar requirements of the hardware.

e. The production contract provides only for the delivery of spare parts per existing Air Force specification. Changes to Air Force specifications must be incorporated into both the vehicles and the spare parts by personnel familiar with the specifications, procedures and hardware.

f. The vehicles and spares must be inspected, maintained, updated and rotated in accordance with existing Air Force specifications.

SSH/cs

17 Oct 62

3. It would not be in the best interest of the Government to invest in the training of new personnel at another source and duplicate existing trained personnel. In addition, duplication of certain transporters, special handling tools and fixtures, facilities, etc., would be required. No expensive containers or transportation is required when the existing Lockheed facilities are utilized. Also, any changes to the hardware can be expedited, in that communications are more direct within one company than it would be between two companies. No additional Air Force personnel are required to monitor this program at Lockheed.

4. Consideration was given to the possibility of follow on requirements being procured on a competitive basis and continuing consideration along these lines will be made.

5. This requirement is of an urgent nature, and must be implemented immediately. Time is not available to create a training program or to establish the required facilities, handling equipment, and procedures at another location.

6. Selection of Lockheed Missiles and Space Company as the contractor for this effort is therefore considered to be in the best interest of the United States Government.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
S-01A Space Project Directorate

[illegible]

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[redacted] X AF

SSD LOS ANGELES CALIF

LOCKHEED ACFT CORP MISSILE & SPACE CO SUNNYVALE, CALIF (MAILED)

INFO: AFPRO, LOCKHEED ACFT CORP MISSILE & SPACE CO, SUNNYVALE,CALIF

INFO: MSFC, HUNTSVILLE, ALA

Copy to:
SSVZR
(Maj Albert

UNCLAS SSH 23-10-37

FOR H. T. LUSKIN, T. J. ANDERSON, AND L. R. VIGGIANO. INFO AFPRO FOR RMD, MSFC FOR M-LAU-A, F. DUERR.

I. REFERENCE A: XLR81-BA-13 START SYSTEM PRESENTATION AT LMSC 12 OCT 62, B: TWX SSVZR 16-10-231, DATED 16 OCT 62 AND C: TWX LMSC/A306514/91-22 SUBJ: MULTIPLE START METHOD DATED 18 OCT 62; THE RECOMMENDATION OF THE LOCKHEED MISSILES AND SPACE COMPANY CONTAINED IN TWX REFERENCE C IS ACCEPTABLE TO HQ SSD, I.E., THAT THE START TANK SYSTEM BE ADOPTED FOR THE XLR81-BA-13 ENGINE (BELL MODEL 8247). LMSC IS DIRECTED TO PROCEED WITH THE DEVELOPMENT OF THIS ENGINE.

II. ORDERLY WORK STOPPAGE OF DEVELOPMENT TESTING ON THE SUCTION PRESSURE SYSTEM IS INTERPRETED TO INCLUDE DOCUMENTATION OF ALL

23 080
OCT 1962

SSHAA

ROBERT K. LE BECK, LT COL, USAF/vjq
R&D 3910 1 2

UNCLASSIFIED

SIGNED

EDWARD F. BLUM, Lt Col, USAF
Chief, Vehicle Engineering Div
System Program Director for Agena

ANALYSIS AND TEST DATA IN REPORT FORM. REMAINING DEVELOPMENT TEST ACTIVITIES SHALL BE CONFINED TO THE ABSOLUTE MINIMUM ESSENTIAL. TEST HARDWARE PROCUREMENT ACTIVITIES IN PROCESS FOR THE SUCTION PRESSURE START SYSTEM SHALL BE EVALUATED AGAINST THE NEEDS OF OTHER GEMINI PROPULSION SYSTEMS DEVELOPMENT PROGRAMS; HOWEVER, PROCUREMENT ACTION BY BELL AEROSYSTEMS CO SHALL BE DEFERRED REPEAT DEFERRED UNTIL FURTHER NOTICE.

III. PRESENT PLANS ARE THAT THE XLR81-BA-13 (BAC MODEL 8247) ENGINE WILL BE IDENTIFIED AS THE ALTERNATE BASIC ENGINE FOR THE S-01A VEHICLE. HOWEVER, ONLY THE VEHICLES (BASIC AD 13's) DELIVERED AS GEMINI TARGET VEHICLES WILL HAVE THE XLR-BA-13 ENGINE INSTALLED AT DELIVERY.

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SSZD/Maj Hegerle/3911 [illegible]

Agena D C&C Optional Equipment

SSO (Col Hedrick)

1. Reference SSZ Policy Memorandum #22, Agena D Optional Equipment Procurement Policy, dated 25 Jan 1962 (attached).

2. The Agena D program office has the responsibility of insuring that all optional equipment is designed, developed and qualified to be compatible with the Agena D vehicle. If re-engineering of any airborne satellite control hardware becomes necessary to insure compatibility with the Agena D vehicle, the procurement decision for that item will be resolved on a case-by-case basis between SSH and SSZ.

3. The selected satellite control optional equipment procured through SSO, such as transponders, decoders and transmitters that mate with adapter kits procured through the Agena D office, have undergone considerable re-design since the inception of the Agena D. These changes have been made unilaterally by SSO in response to using program desires, with the Agena D office reacting to stop procurement and/or re-design of adapter kits and AGE. The Agena D C&C adapter kits are procured under the production contract and assigned on a first in first out basis to satisfy using program requirements. Changes to C&C equipment procured through SSO without complete Agena D review serves to negate the advantages gained under Agena D standardization.

4. It is requested that all changes to C&C optional equipment be processed through the Agena D Configuration Control Board to insure compatibility and orderly improvement to the Agena D.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

1 Atch
SSZ Policy Memo #22
dtd 25 Jan 62

~~CONFIDENTIAL~~

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NOV 0 1 1962

SSHR/Maj [illegible]/ [illegible]

Agena D FY-63 Funding Requirements to Support NASA Program Requirements

SSVR

1. The FY-63 Agena D costs for NASA programs has been established as 8.2M (reference attached SSHR letter, SSH-1052 dated 11 Sept 1962.)

2. These costs are based on Date Table 19C dated 26 July 1962. Based on established SSG policy (policy memorandum attached), program funds allocated to support this effort will not be reprogrammed due to changing program requirements without SSG approval.

3. The revised Agena D requirement schedule for Gemini reduces your program's requirement for Agena D's from 9 vehicles to 8 vehicles by elimination of the DTV. The first four Gemini vehicles fall into the FY-63 funding period with 2 vehicles @ 1.3M and 2 vehicles @ .6M for a total of 3.8M for FY-63.

4. The total Agena D costs for the 8 vehicle Gemini program will be 3.8M in FY-63 and 6.6M in FY-64 for a total of 10.4M. This 10.4M provides for the total costs of 8 Gemini vehicles including spares and optionals, plus a pro-rated share of logistic support, storage, repair, and general engineering support associated with the Agena D production program. These costs are based on NASA furnishing the model 8247 multi-restart engine with Agena D responsible for modification and installation on the S-01A vehicle.

5. The total FY-63 NASA program funding requirement to support NASA Agena D requirements is 8.2M broken down by program as reflected in the referenced letter attached. It is requested that these funds be made available as soon as possible.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

2 Atch
1. SSHR ltr, SSH-1052 dtd 11 Sept 62.
2. SSG Policy Memo dtd 4 Sept 62.

NGRADED AT 3 YEAR INTERVALS;
DECLASSIFIED AFTER 12 YEARS.
DOD DIR 5200.10

~~CONFIDENTIAL~~

SSH-1106

240

NOV 02 1962

[redacted]

Lockheed Missile & Space Company
ATTN: Mr. R. R. Kearton
P.O. Box 504
Sunnyvale, California

1. Reference: letter LMSC/A064742, Dept. 61-65, Mr. R. R. Kearton to Col H. M. Fletcher, dated 23 October 1962; subject: S-01A Vehicle Assignment Philosophy.

2. The responsiveness of LMSC in establishing the requested first-in first-out assignment of S-01A vehicles in all scheduling exercises is to be commended. By implementing this assignment policy we insure against storage obsolescence and provide for orderly delivery of S-01A vehicles to satisfy using program requirements. SSH acknowledges that deviations to this procedure will, at times, be required due to peculiar program requirements. These deviations will be subject to concurrence of SSH.

3. Response to LMSC recommendations in referenced correspondence are as follows:

a. Par. #3(a) - SSH concurs in the assignment of AD-13 to vehicle 4301.

b. Par. #3(b) - Due to contemplated schedule acceleration for Program 162 which would increase the requirement for non-TAT vehicles no action should be taken at this time to retrofit AD-11, AD-12, AD-14 and AD-17 to TAT configuration. The storage delay in assigning vehicles AD-14 and AD-17 to Atlas boosted programs should be considered in view of retrofit costs involved. The costs and modification spans for retrofitting S-01A's to TAT is presently being prepared by the LMSC/SSD S-01A organization and will be available if future action is required in this area.

c. Par. #3(c) - SSH concurs in the requirement to determine the detrimental effect, if any, which might occur to vehicles in storage. It is felt that this effort will be a collation of information presently on hand such as seal life and past storage experience. This effort will be part of the sustaining engineering effort under the -191 contract.

4. It should be noted that there are no contemplated lot structure changes to S-01A vehicles presently on contract. This standardiation will eliminate the program costs and schedule impact referenced in paragraph four of your letter. Any changes required due to S-01A design deficiencies will have to be corrected across the board to enable the S-01A vehicle to perform as specified.

SIGNED

HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

Copies to:

LMSC (Mr. Shoenhair)
AFPRO (Col. Voyles)

241

SSZ/SY

Fixed Ullage Rocket Carrier Problem 8 November 1962

Lockheed Missiles & Space Company
ATTN: Mr. J. L. Shoenhair
Department 68-01
Sunnyvale, California

1. In reviewing ECP LH-68-10, Modification to the Ullage Rocket Carrier Assembly, it became apparent that the current procedure of installing the fixed ullage rocket carrier in final assembly should be re-examined. At present, all vehicles are scheduled to be delivered with the fixed ullage rockets installed. However, it now appears that a large number of the vehicles will be flown without these units installed. To meet delivery schedules, this would require the manufacturing of a large number of units that would subsequently be scrapped, since the ullage rockets will be deleted from the improved vehicle version.

2. The following investigations are requested:

a. Determine whether the fixed ullage rocket carriers can be installed at the base with no trouble. Would it cause alignment effort, best done in Building 152 or Building 104? If they can be and there are no alignment problem, these can become optional equipment or items shipped separate for base installation.

b. Determine how many units are required of the old and new type carriers (this should to coordinated with SSD). It is proposed that the old item would be used up on mission where they are satisfactory. The new type only where required, until old items expended.

c. Determine whether it is economical to complete some of the units now being held incomplete at CALAC, considering returns from -21 Contract, -68 Contract, and spares.

d. Prepare an ECP to manufacture the new type of carriers required and recommend the new approach to be used, specification changes, contract changes, etc.

EDWARD F. BLUM
Lt. Colonel, USAF
System Program Deputy Director for Agena

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NOV 14 '62

SSHK/H.F. Becker/2395 [illegible]

Request for Authority to Extend Definitization Date and to Obligate Additional Funds - Letter Contract AF 04(695)-68, Agena D

SSHK
S[illegible]P
SCK
IN TURN

1. Authority is requested to extend the definitization date and increase the obligation limitation on Letter Contract AF 04(695)-68 with Lockheed Aircraft Corporation, Lockheed Missile and Space Company, Sunnyvale, California, for the Standard Agena D Program.

[redacted]

5. Authority is herewith requested to:

a. Extend the definitization date to 30 December 1962.

[redacted]

SIGNED

H. F. BECKER
Contracting Officer

[redacted] gement Agreement

NOV 14 1962

SSYZ

1. Reference is made to your 3 Nov 62 letter, Proposed Management Agreement between NASA and Air Force, and telephone conversation Col Brandeberry-LtCol Smith 9 Nov 1962. NASA's proposed management agreement, if understood correctly, asks for the following:

a. Control of launch effort.

b. Contractual control of launch capability and Agena D modifications.

c. More voice in development of basic Agena D.

d. Miscellaneous - Vehicle design review, evaluation of test, acceptance, post flight analysis and rework of reliability and quality assurance programs, plus program monitoring.

Summarizing, NASA wants complete control of its own projects and a voice in any other program that uses NASA funds.

2. SSH cannot object too strongly concerning NASA's desire to control their own program, since they have justified their own funds. However it should be pointed out that coordination of the programs will be extremely difficult (experience has shown it to be difficult within SSD alone) and that duplication and wasted contractor manpower is most certain to result. Since it is impractical to have two directors on a single program SSH can only entertain NASA direction on the basic Agena D program through the medium of the Configuration Control Board (CCB).

3. For your own information SSH has agreed to NASA representation on the CCB; they have been invited to design reviews, they sit on the acceptance team and they send representatives to meetings on the YLR 31 engine and the secondary propulsion system.

ROY O. SMITH, JR., Lt Col, USAF
Executive Officer
System Program Director for Agena

for HENRY M. FLETCHER, JR.
Colonel, USAF
System Program Director for Agena

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SSHK/Mr. Tripp/4115 [illegible]

Request Authorization for Letter Contract AF 04(695)-233 NOV 16 1962

SSHK
SSHP
SSK
IN TURN

1. Pursuant to the authority vested in the Chief, Office of Procurement and Production, request authorization for the issuance of subject Letter Contract instrument based on the justification of essentiality contained herein:

a. Contractor's Name and Address:
Lockheed Aircraft Corporation
Missiles and Space Company
P.O. Box 504
Sunnyvale, California

b. Services and supplies necessary to provide and maintain capability for launching vehicles in accordance with Work Statement (as revised 9 October 1962) attached.

c. Required Performance - 30 December 1962 through December 1963. Note - Contractor will be precluded from increasing his manpower beyond that carried under Contract AF 04(695)-52 for Agena Launch Services at PMR as of 29 December 1962.

d. Funding:

(1) Total Estimated Cost: $25,000,000

(2) Requested Obligation Limit: $12,500,000

(3) Amount to be instantly obligated: $1,500,000

(4) Any anticipated funding problem? No.

e. Determinations and Findings:

(1) Determination and Findings, Authority to Negotiate contract pursuant to 10 U.S.C. 2304(11) attached hereto to cover Programs 461, 698BJ, 698AK, 206, 162 and NASA. No difficulties are anticipated.

SSHK/es

W. H. TRIPP

14 Nov 62

[redacted]

f. Anticipated Definitization Date: 1 March 1963.

g. Justification: The interests of National Defense demand that the Contractor is given a binding commitment so that work can be commenced immediately. Negotiation of a definitive contract in sufficient time to meet the procurement is not possible. No other type of contract is suitable. Specific reasons why urgency exists and why departure from normal contracting procedure is necessary follow, including details of when the operating activity was first made aware of the requirement and by what document or means:

(1) SSZM letter dated 27 July 1962 transferred procurement and administration responsibility for PMR Launch Capability to SSH. Two weeks later complete transfer of all files and documents connected with the requirement was completed.

(2) Work Statement negotiations began 3 August 1962 and continued intermittently to 9 October 1962 at which time the last revision was agreed upon. The Contractor's firm cost proposal which was originally scheduled for submission 3 October was, due to Work Statement Changes, slipped twice, and finally received at AFSSD 1 November 1962.

(3) Fact finding was conducted 8 through 10 November 1962.

(4) Based upon the foregoing, delays in receiving audit information, and problems connected with scheduling negotiation price support, Contract negotiations cannot begin until 3 December 1962.

(5) Current contractual coverage for PMR Launch Capability expires 30 December 1962 and immediate contractual coverage subsequent to that date must be provided. Since, even under optimum circumstances, a Definitized Contract cannot be executed prior to the Contract AF 04(695)-[illegible] expiration date, a Letter Contract is the only suitable means of providing necessary contractual coverage.

2. Forwarded as attachments hereto are the contract files and/or other documents essential to an understanding of the proposed procurement action, based upon which the operating activity formed its decision on the essentiality of Letter Contract coverage.

SIGNED
[illegible] H. [illegible], JR.
Colonel, USAF
System Program Director for Agena

8 Atch
1. Work Statement
[redacted]
8. Sole Source Justification

245

[redacted]

NOV 26 1962

Umbilical Test Philosophy and Blanket Removal for SLV3/S-01A/Payload-[illegible]

6555 Aerospace Test Wg (Col Perry)
[illegible]; [illegible]

1. During the Program [redacted] Umbilical System Design Review on 9 Nov at [illegible] days, the 6555 ATW representative confirmed an earlier ATW statement that fly-away blanket release could not be considered as a mode of blanket removal.

a. This position establishes the possibility for an independent mechanical or electro-mechanical blanket removal system in addition to the proposed primary [illegible] type pneumatic system actuated by RVOC. Redundant systems complicate the umbilical system and further increases the possibility of human error.

b. The ATW requirement does not appear consistent with results obtained at AMR Launch Complex 12 with Ranger and Mariner fly-away blanket releases. Movies indicate that the blanket remains against the face of the mast until the vernier passes. At that time the blanket is torn apart by the turbulence and burned. Post launch inspection shows that only small pieces of the blanket are left.

c. The position that fly-away blanket release is not acceptable for the S-01A/SLV3 should be more clearly defined. This office will completely evaluate the system and take necessary action to provide an acceptable system for all SLV3 type launch stands.

2. The 6555 ATW representative also noted that boom retract tests will be performed after the flight vehicles are mated. During this period the GE vehicle requires a virtually continuous source of power and conditioned air. GE air conditioning and electrical couplings must remain connected.

a. The GE and boom retract test requirements can be met by disconnecting lanyards and providing additional ducting and cabling between the boom and vehicle or by conducting the retract tests within the established time limits. The first approach could invalidate the system and damage the vehicle couplings because of shock loadings transmitted through the ducting and cabling. The second approach appears limited by test time required.

Lt [illegible]/ecn

20 Nov 62

b. It is desired that the 6595 ATW consider the possibility of performing boom retract tests prior to the mating of the flight vehicles to insure that GE and E-01A systems remain sound. If this is not feasible, appropriate considerations will be initiated by SSEG.

FOR THE COMMANDER

SIGNED

JOHN E. PLUMMER, JR
Lt Colonel, USAF
Chief, E-01A AGE Division

Copy to
SSZX (Maj Lindsey/Capt Haskins)
SSBA (LtCol Blum)
SSZA (Capt Tallman)
SSZMS (Capt Haygood)

246

H

~~CONFIDENTIAL~~

[illegible]
[illegible]
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FM CSAF
TO RUEAQT/AFSC ANDREWS AFB MD
INFO RUWMBY/SSD INGLEWOOD CALIF
BT
~~C O N F I D E N T I A L~~ FROM AFSSV-EC 58956

AFSC FOR MSFA. SSD FOR SSN. REFERENCE IS MADE TO AGENA D ADVANCED DEVELOPMENT PLAN PRESENTED BY AFSC AT HQ USAF 14 & 15 NOVEMBER. THIS MESSAGE IN IV PARTS. PART I. REFERENCED PLAN AS PRESENTED IS NOT APPROVED BASED ON VIEW HERE THAT A NUMBER OF IMPROVEMENTS PROPOSED, ALTHOUGH DESIRABLE, ARE NOT SUPPORTED BY NEED TO CORRECT SPECIFIC DEFICIENCIES OR TO MEET NEW REQUIREMENTS. PART II. THE PROPOSAL FOR IMPROVED PYROTECHNICS IS SUPPORTED BY REQUIREMENTS AND YOU ARE AUTHORIZED TO PROCEED IMMEDIATELY WITH THIS EFFORT. EFFORT TO BE SUPPORTED WITH AGENA D FUNDS PREVIOUSLY PROVIDED AFSC. PART III.

PAGE TWO RUEAHQ 395
THE NEED FOR WEIGHT REDUCTION IS WELL JUSTIFIED. THIS IMPROVEMENT SHOULD BE REALIZED BY A SPECIFIC WEIGHT REDUCTION PROGRAM AND NOTABY-PRODUCT OF OTHER CHANGES. REQUEST A PROPOSED PLAN FOR SUCH A PROGRAM, INCLUDING COST ESTIMATE, BE PRESENTED AT HQ USAF EARLIEST POSSIBLE DATE. ADVISE DATE PRESENTATION CAN BE MADE. PART IV. CONCUR IMPROVED HORIZON SENSOR REQUIRED. FINAL DECISION ON IMPROVED SENSOR WILL BE DEFERRED UNTIL LATE DECEMBER OR EARLY JANUARY TO REALIZE BENEFIT FROM TEST DATA THAT WILL BE AVAILABLE BY THAT DATE.
GP-4.
BT
30/2200Z NOV RUEAHQ

~~CONFIDENTIAL~~

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